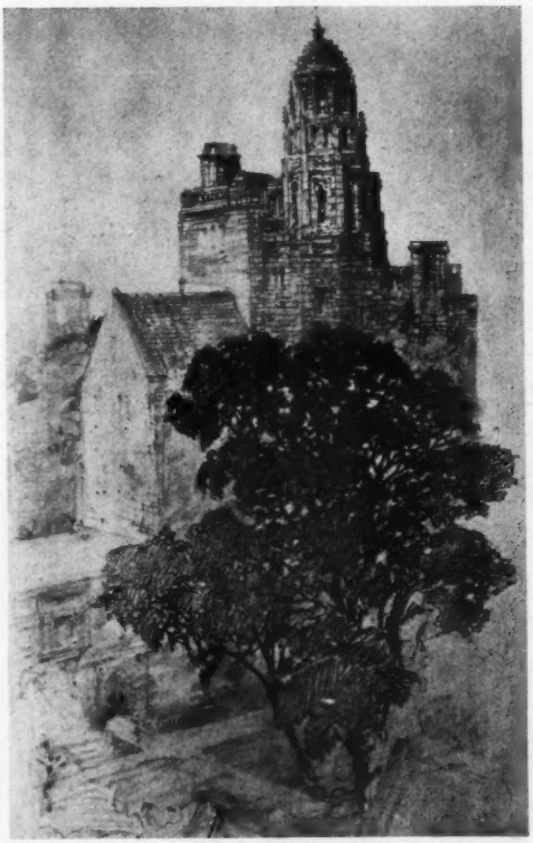
THE AMERICAN ARCHITECT
The ARCHITECTURAL REVIEW
VOL. CXX WEDNESDAY, NOVEMBER 9, 1921 NUMBER 2380

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

A Communication from James Gamble Rogers, Architect

EDITORS seem to think that what the architect might say of his building would be of great interest to their readers. Perhaps they are right. At any rate they generally importune architects to write something to accompany the publication of their illustrations. Generally too, the architects refuse—and I believe that they are right in refusing—not merely because of that old and often fallible superstition that an architect who writes well fails to design well, but indeed for the simple reasons that there is no necessity for his writing and that it is a dangerous practice for a designer. There is no professional duty requiring it, no need of it, for a building is of too permanent a character to be affected, architecturally, by publicity or advertising. No matter how bad or how good it may be considered at the moment, time will place the building according to its artistic worth.



Looking across Campus

The chances are that the architect will receive more harm than good from writing, because in his eagerness and enthusiasm—which most architects have—he will in all probability propound principles, creeds and dogmas that will later adversely affect his freedom of design, because he will be consciously or unconsciously hampered by the requirements of a principle that he has previously enunciated. He would, to some extent, get into the rut of designing by reason, which is contrary to the tradition that you cannot design by reason, though it is absolutely essential that your design, when finished, should be reasonable.

If there is any truth in the statement of a great architect, that to be a really able designer, one must have all the traditions of architecture so well at his finger tips that he knows when boldly to depart from them, then certainly there can be no hampering of freedom by a thought of defending some principle formerly uttered in good faith.

While I can see, for the above reasons, no architectural call on me to write about these buildings, still I feel, after all the work you have done to make this presentation, that there is an obligation to contribute something as my share of this large piece of work.

Though I am convinced that it would be a mistake for me to write about the architecture of these buildings, I will, however, enumerate a few of the forces that are of help to an architect in designing a large group of buildings. The most important ones are the following: Untiring work, inter-

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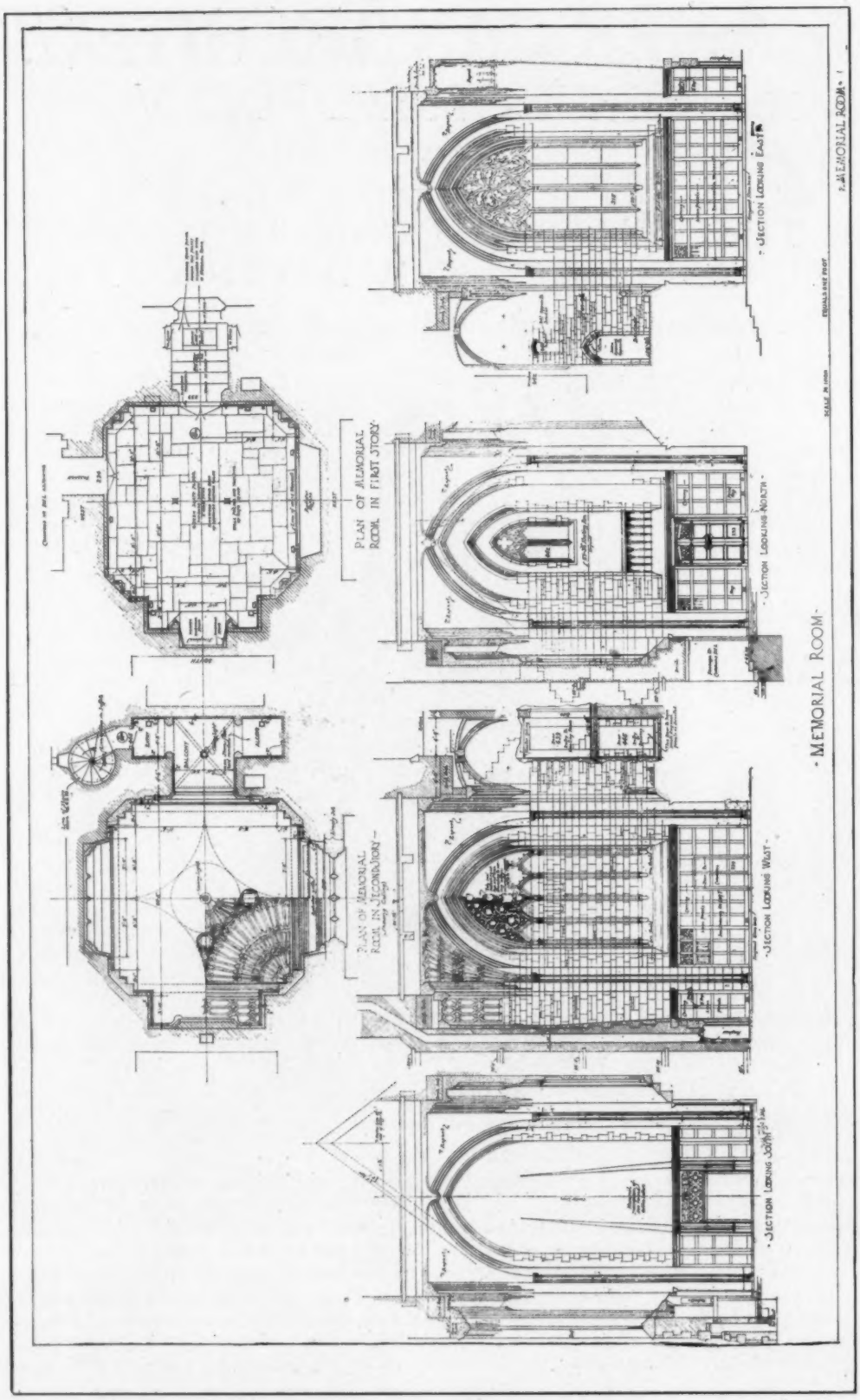
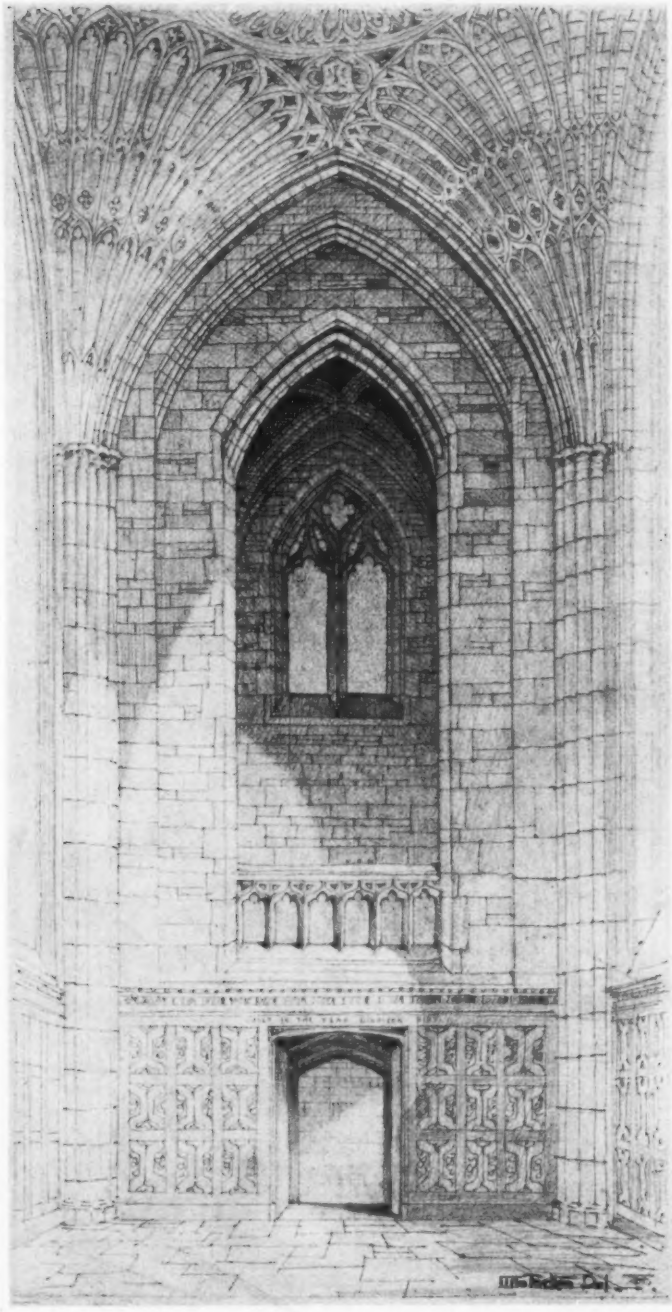


HARKNESS MEMORIAL TOWER, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT



STUDY FOR MEMORIAL ROOM

HARKNESS MEMORIAL TOWER, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

XUM

est or impulse and co-operation. Voluntary co-operation of the office. Voluntary co-operation of the client. Voluntary co-operation of the builder.

Untiring work is so well known to all of the profession that I will pass that over by simply saying that it is in the program of the architect's life "a mandatory requirement."

Interest or impulse is used instead of the word "inspiration" which conveys to me the wrong impression, as I believe in our work it does generally to the public. Interest or impulse is better be-

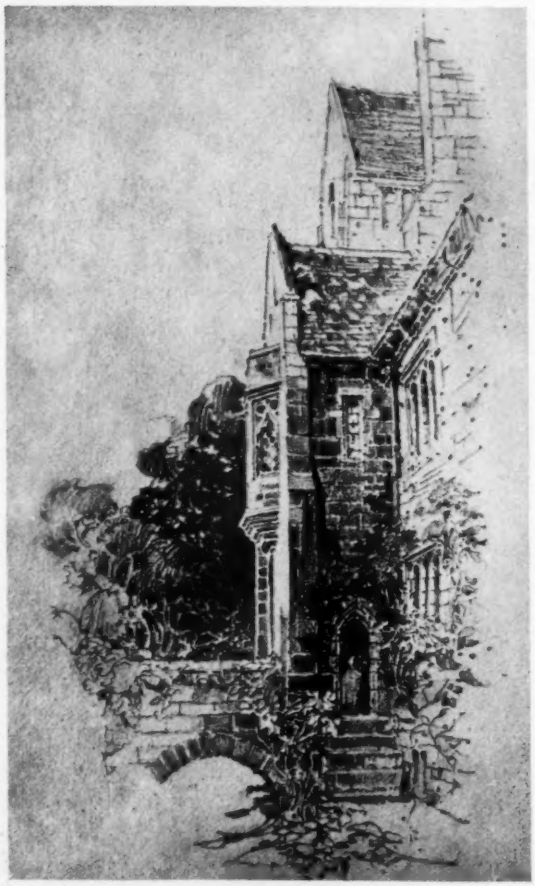
Sketch in Main Quadrangle

cause they mean a force that is something active and dynamic, that seems to spur on to a better purpose as for instance, in the case of these buildings, the great history of the able active men of Yale and their great doings which must make a good impression on any designer who works on a building of which they are in any way a part.

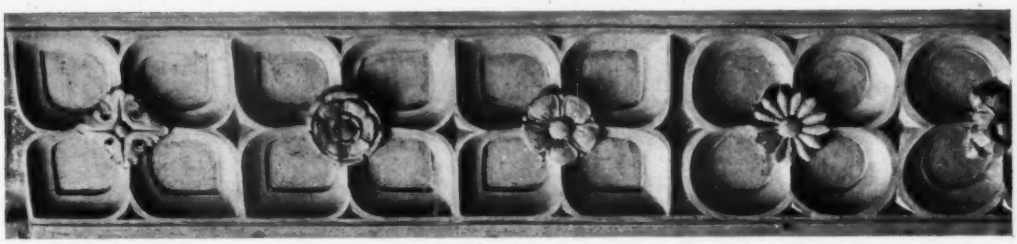
IN olden times when the great monumental buildings were erected there was an architect, a master builder who stood responsible for the whole structure and all its details, at times even doing actual work on the building himself. More truly was he the architect than is possible in this day of complex fabrication and speed of construction. As time was not as it is today, a measure of money value, and also a necessity, there were really but two major features to demand his close attention. Beautiful design and structural safety were the essence of competent building. These are, or should be, essential today, but the insistence of speed of construction has become so important that there is not time enough for any architect really to design the whole structure with all its numerous details, and therefore he must have able lieutenants to look after the various parts.

In those early days the architect or master builder might stand before his work as the artist-painter does before his easel. He could direct every detail of construction at the very moment of its placing. He might alter or reject, add or take away. Today the process is different. All the different pieces must be made practically at one time and designed in such a way that, though made in various parts of the world, they will not only fit when brought together but form a good architectural composition and be artistically correct in their details.

It is therefore, necessary to have made with rapidity, all these items that will be correct months afterwards when brought together, and so it is that much more necessary that the architect organize a group of capable and trained men who can not only do their own particular part, but also keep the harmony of the perfect whole. These men the architect will work with as lieuten-



Sketch on Library Street



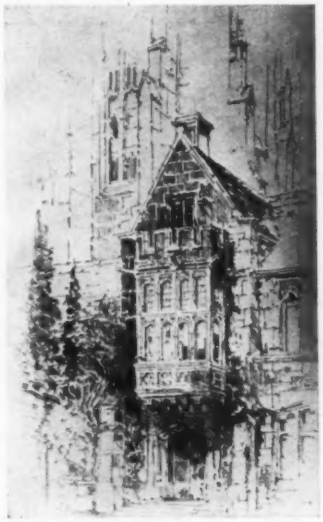
Plaster Model for horizontal beams

ants to whom he will be the inspiration and guide to secure, in the numerous and varied details, the spirit of the whole. The architect today is the architect of the general idea only, but the will and force of the details. He is the general of the able lieutenants who really make the building.

You can appreciate, therefore, that it is just and fitting that proper acknowledgment be made to these able lieutenants, captains rather, in this regiment of which, as architect of this group, I was the commanding officer. In this connection I wish to express my appreciation first of all to Mr. Otto Faelten and to Mr. Adolph Bernhard whose great ability and loyal co-operation made possible many of the best parts of this Memorial Quadrangle.

Further it was fortunate to have had the services of Mr. George Nichols as superintendent on the work where he made proof that on a building of this nature the competent, merely practical, man would have missed many points of artistic value which add much to the building if they can be settled while the article is actually being put into place.

Anyone having the services of the genius of Mr. Lee O. Lawrie can feel assured that the sculpture and ornamentation will be works of art.



Sketch of a Bay

While Mr. Ronald Robb was only for a short time a member of this staff, his keen appreciation of details and his ability to express them will be found in lasting ornament in many parts of this group.

In the mechanical work there are many evidences of the care and thoughtful study of Mr. Cornelius J. Davis.

These lieutenants and the men in the architect's office might be called, continuing the military simile, the "Regulars." From these regulars the architect must have co-operation if he hopes to do good work, but it would be unfortunate if mention were not made of the value of the "Volunteer" co-operation that to the full extent of each individual labored to bring about the final result.

EXTENUATING conditions nullify the absolute verity of the statement that the building is always good enough for the owner. Still there is much truth in it; for if the owner knew enough first to choose a capable architect and then not hamper him, the result would be a good building. I am certain, however, that such a procedure would produce a building missing in a certain feeling, a definite intangible charm that comes only from close interest and participation.

Detail of carving of a cornice and frieze

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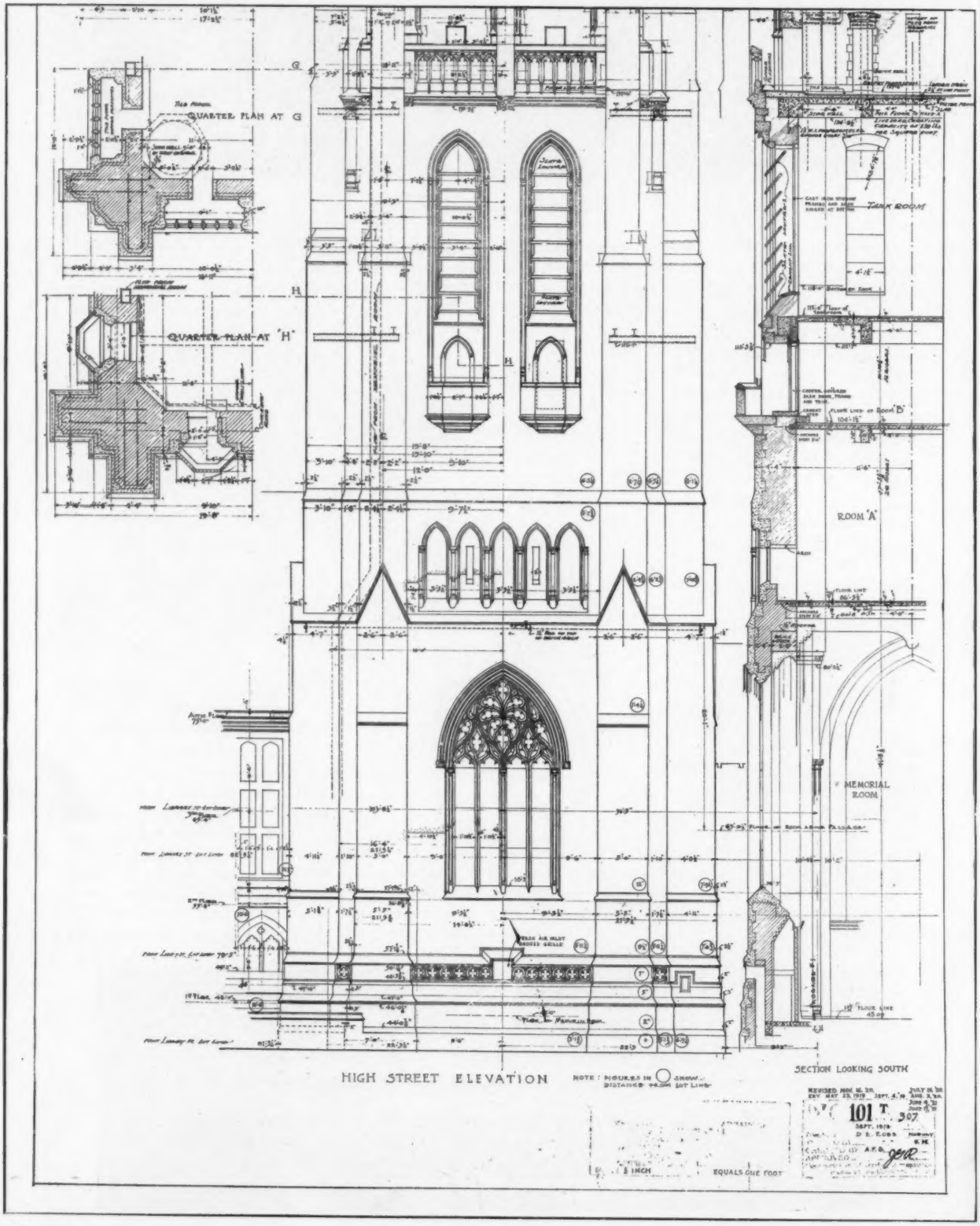
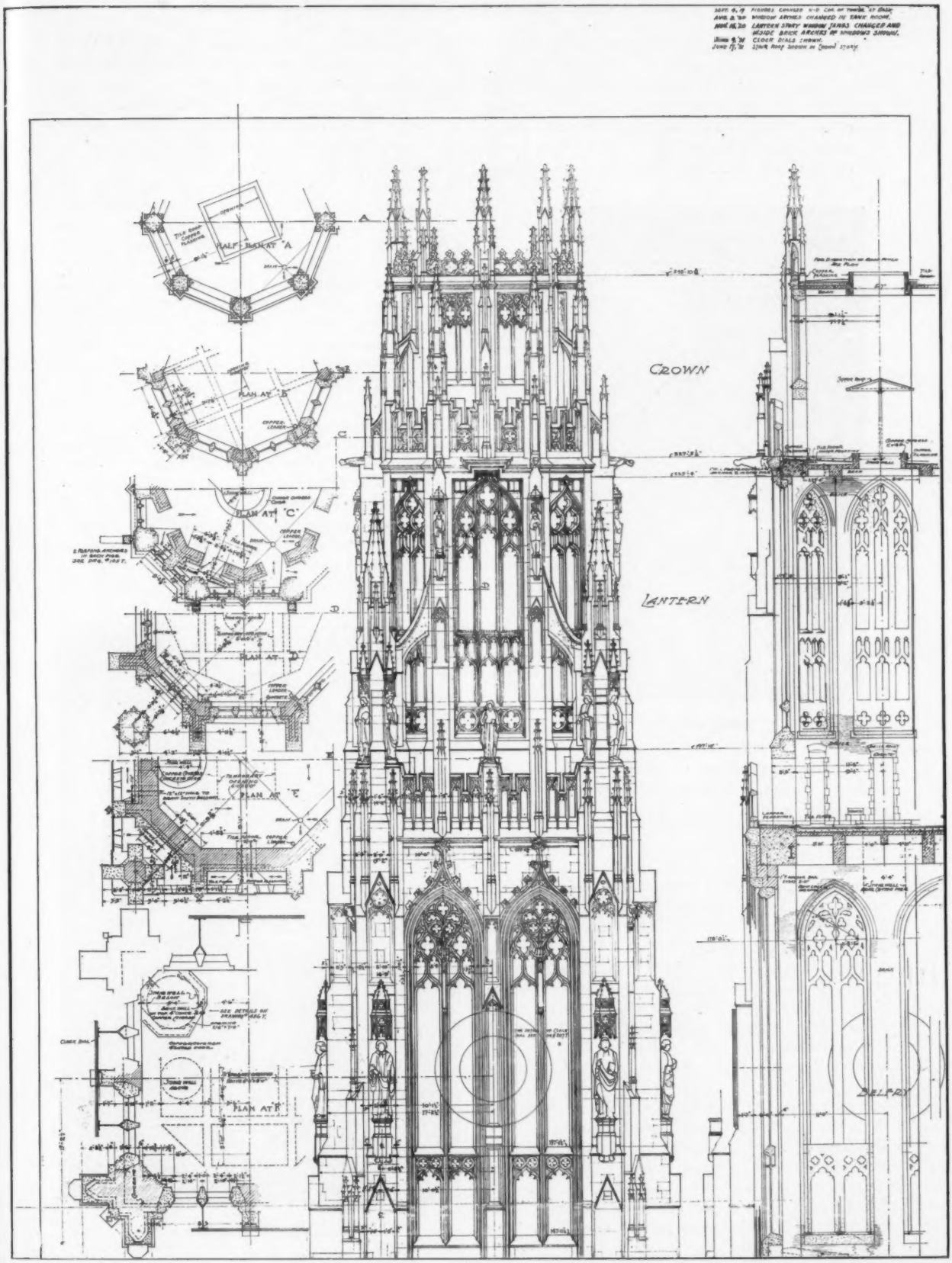


DETAIL OF LOWER HALF

HARKNESS MEMORIAL TOWER, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT



DETAIL OF UPPER HALF

HARKNESS MEMORIAL TOWER, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

I have often thought that architecture was even a more vital thing and that the character of the client is truly expressed in the building. Is it not always true that the person of intelligence and artistic sense has a more attractive house than that which the same architect has built for another less knowing client? On the other hand, do you not often

Looking along Elm Street

see architecture ruined so evidently by the insistence of a client's holding to an idea of a detail that spoils a whole? It is certain that next to the architectural ability of the designer, the most important power for the success of the building is the owner.

In the case of the Memorial Quadrangle we can call the owner the two men, Mr. Samuel H. Fisher and Mr. Edward S. Harkness who represented the donor, and much of this building is due to their broad vision, integrity of purpose, their active interest not only in the building, but in Yale. Such men of foresight with whom all questions can be discussed openly and entirely on their merits, are an assurance in themselves of the welfare of the operation. Their choice of the kind of contract, namely one in which the builder cooperated with the architect from the inception of the plans and their choice of the builder, Marc Eidlitz & Son, Inc., are only some of the evidences of the help they have given in this piece of work.

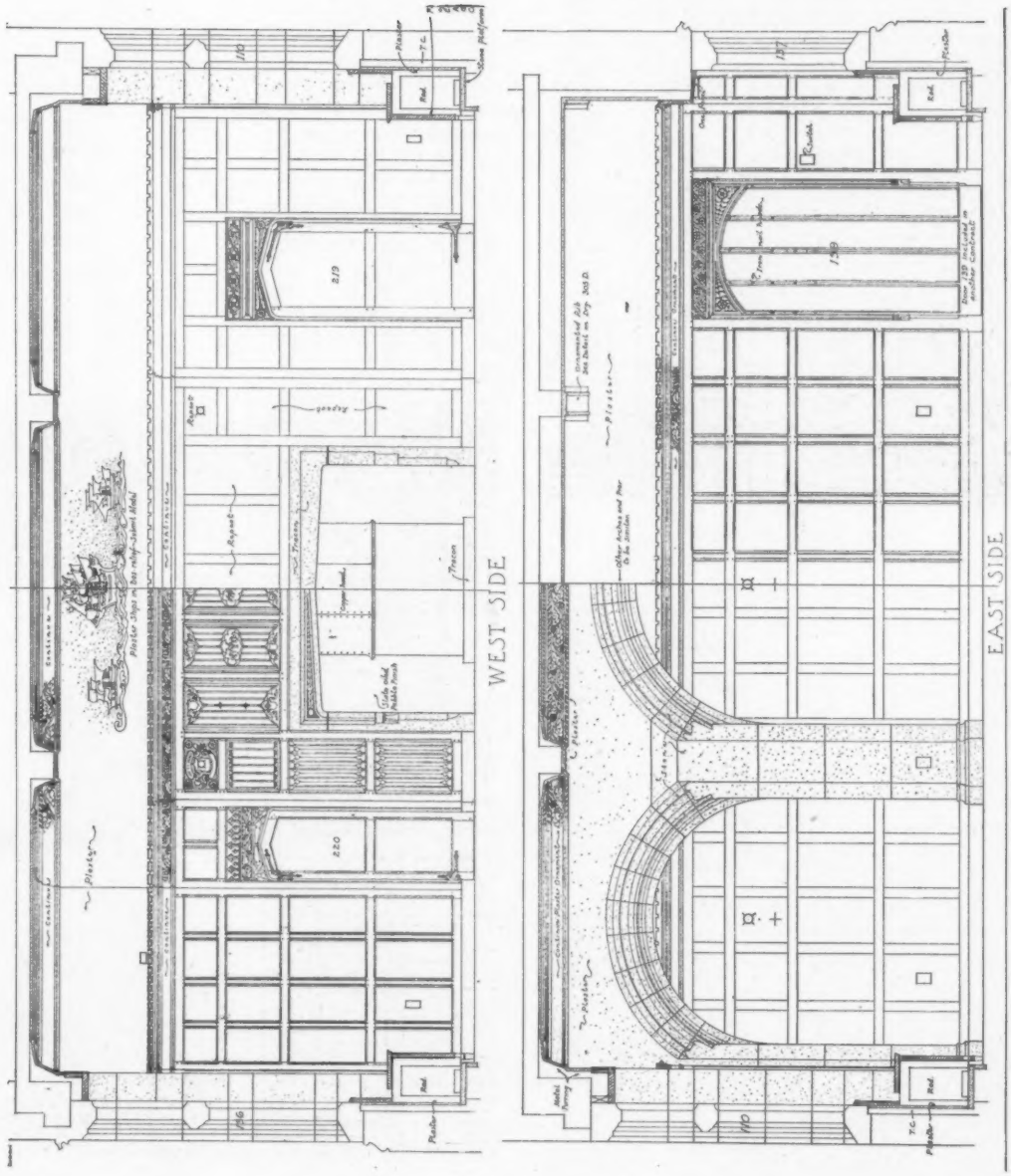
It would not have been possible under the ordinary form of contract to have designed this building as it is designed for we would not have been able then to have utilized the war delays to restudy and redesign various details so necessary to the artistic merit of the group, but instead we would have been compelled to hold to the original design for fear of wasteful extras. Without in any way depreciating the value of the architect's services, we know that no matter how well a building may be designed, it can be made or marred by the work of the builders and when they successfully perform their work, we cannot but appreciate our good fortune. In this particular case from Mr. Otto and Robert Eidlitz themselves, and of their men on the building, Mr. Hedden, Mr. Sutton and Mr. Blaney, we feel that we have had in addition to the regular work, a "Volunteer" service of inestimable value to the good of the buildings. Outside of those actually employed on the work there has been a "Volunteer" interest such as the services of help and inspiration in the numerous good suggestions given by such men as Anson Phelps Stokes, and Mr. George Seymour. Is it any wonder then that in following the old custom of carving on the building the likenesses of those who had been of service to the structure we should feel it incumbent to put in additional to those University Officials who should be there, also the above men who had given such service in giving to Yale the Memorial Quadrangle and the Harkness Tower?

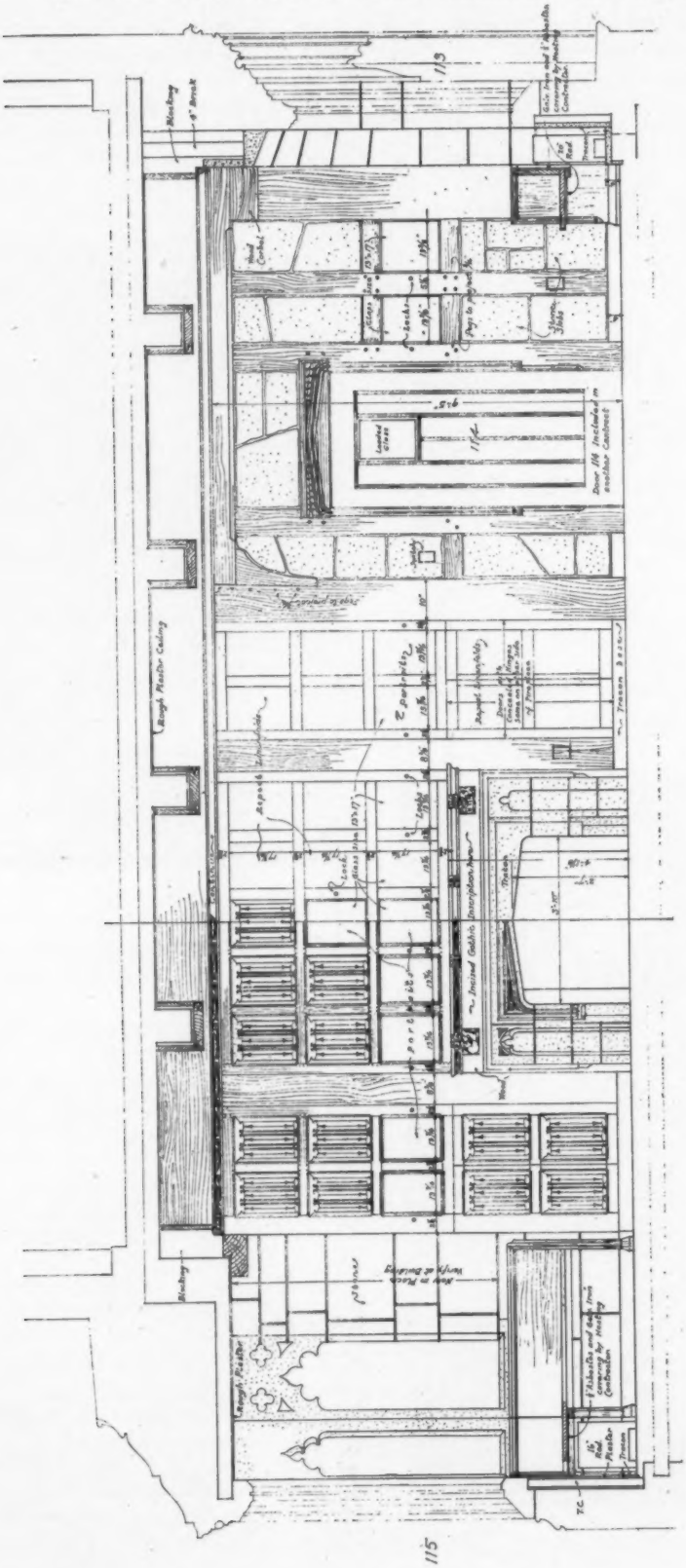
St. George—Detail in Library

DETAIL OF
COMMONS 108-D

MEMORIAL QUADRANGLE,
YALE UNIVERSITY,
NEW HAVEN, CONN.

JAMES GAMBLE ROGERS,
ARCHITECT

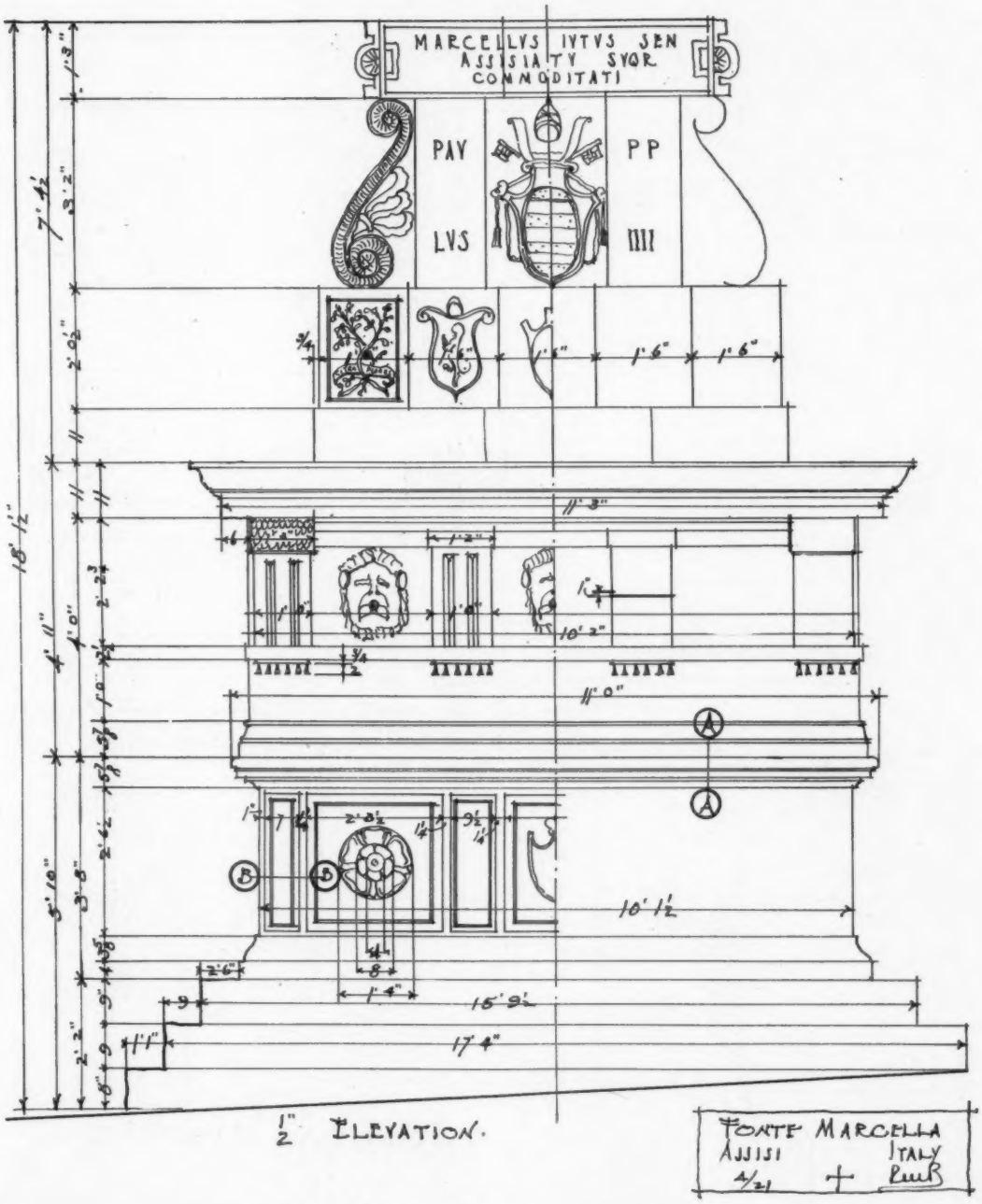




WEST SIDE OF COMMONS 101-L

MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT



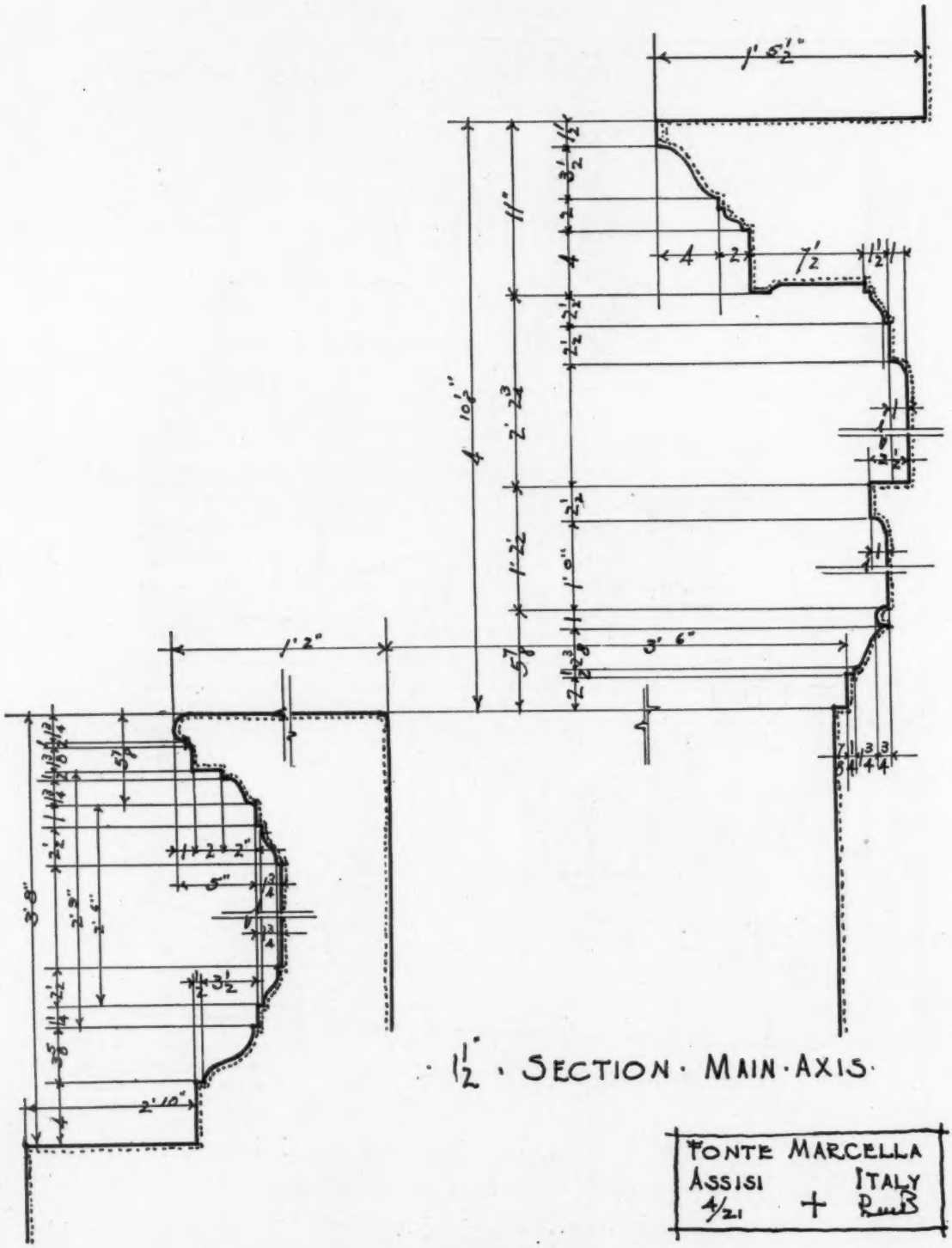
MEASURED AND DRAWN BY ROBERT M. BLACKALL.

35TH HOLDER, ROTCH TRAVELING SCHOLARSHIP

(See Frontispiece for general view of this subject)

THE AMERICAN ARCHITECT, SERIES II.
FRENCH AND ITALIAN DETAILS

XUM



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THE AMERICAN ARCHITECT, SERIES II.
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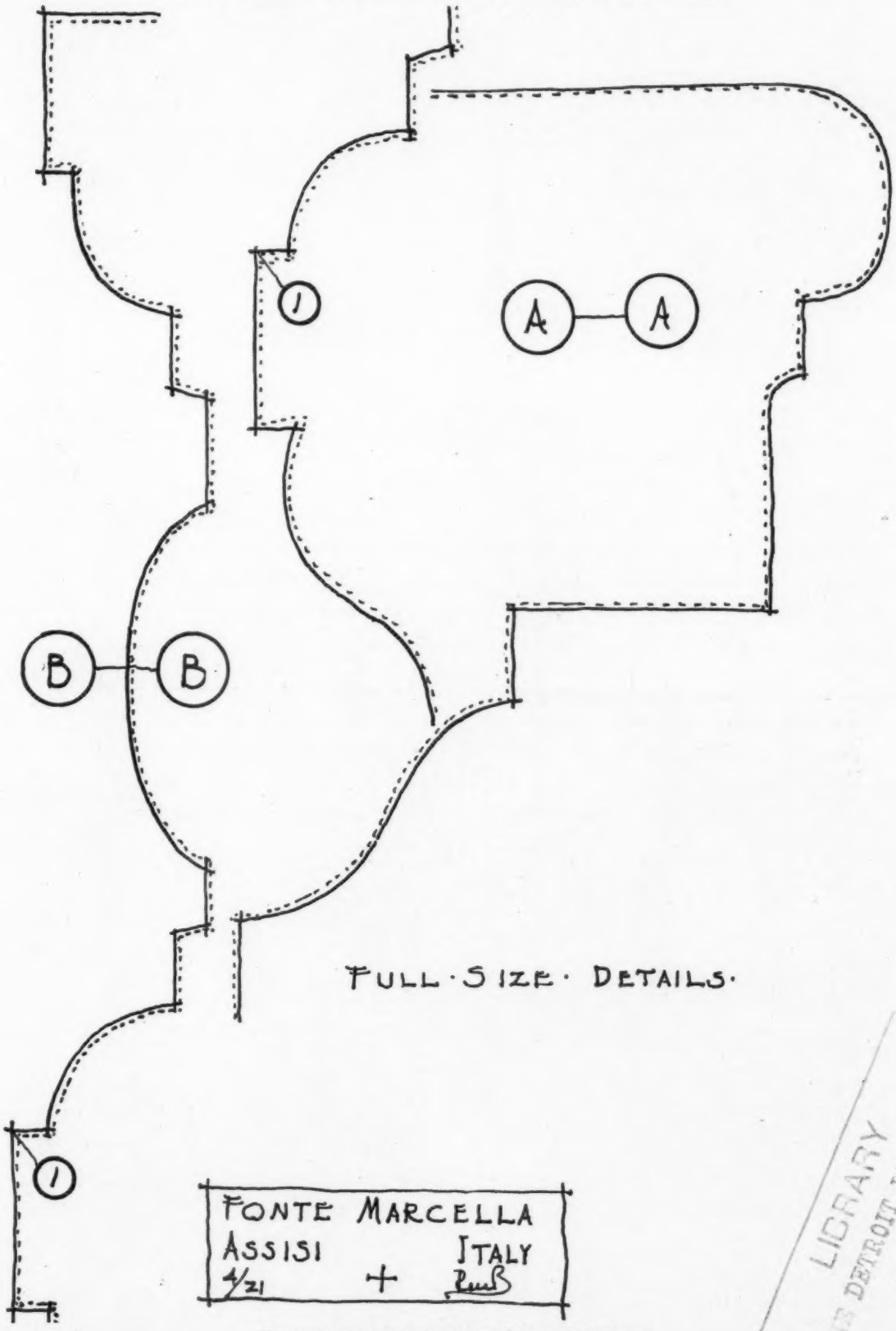

LIBRARY
OF DETROIT EDISON CO.
JUL 14 1921

MEASURED AND DRAWN BY ROBERT M. BLACKALL,

35TH HOLDER, ROTCH TRAVELING SCHOLARSHIP

(See Frontispiece for general view of this subject)

THE AMERICAN ARCHITECT, SERIES II.
FRENCH AND ITALIAN DETAILS

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Christ Church, Philadelphia

(See reproduction of original drawing by O. R. Eggers on opposite page)

THIS FINE CHURCH, one of the oldest now standing in Philadelphia, was built in 1727. *Its history is linked with that of other and perhaps better known historical buildings in that city. It has been maintained with the most zealous care, as near as possible, in its original state, and is affectionately regarded by every citizen as one of the many revolutionary landmarks in which the people take a very proper pride.*

It is an important addition to the already large number of Colonial churches included in this series. It also presents further evidence of the skill and refinement of design of the builder-architects of the period who constructed the buildings which constitute such a valuable heritage to every citizen of the United States.

CHRIST CHURCH, PHILADELPHIA, PA.
THE AMERICAN ARCHITECT Series of Early American Architecture

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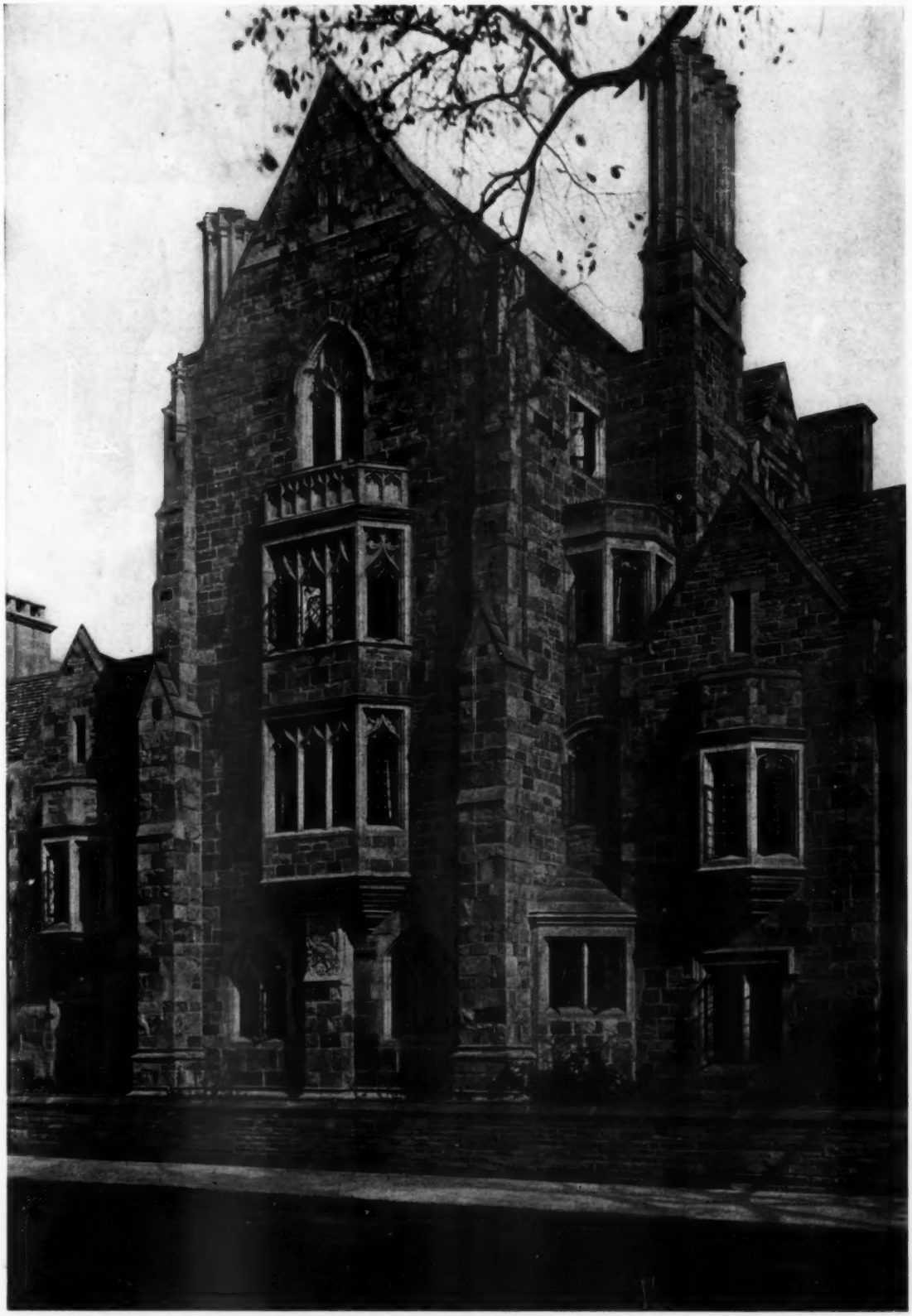

VIEW ON LIBRARY STREET

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

XUM

PIERPONT GATEWAY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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CORNER IN LINONIA COURT

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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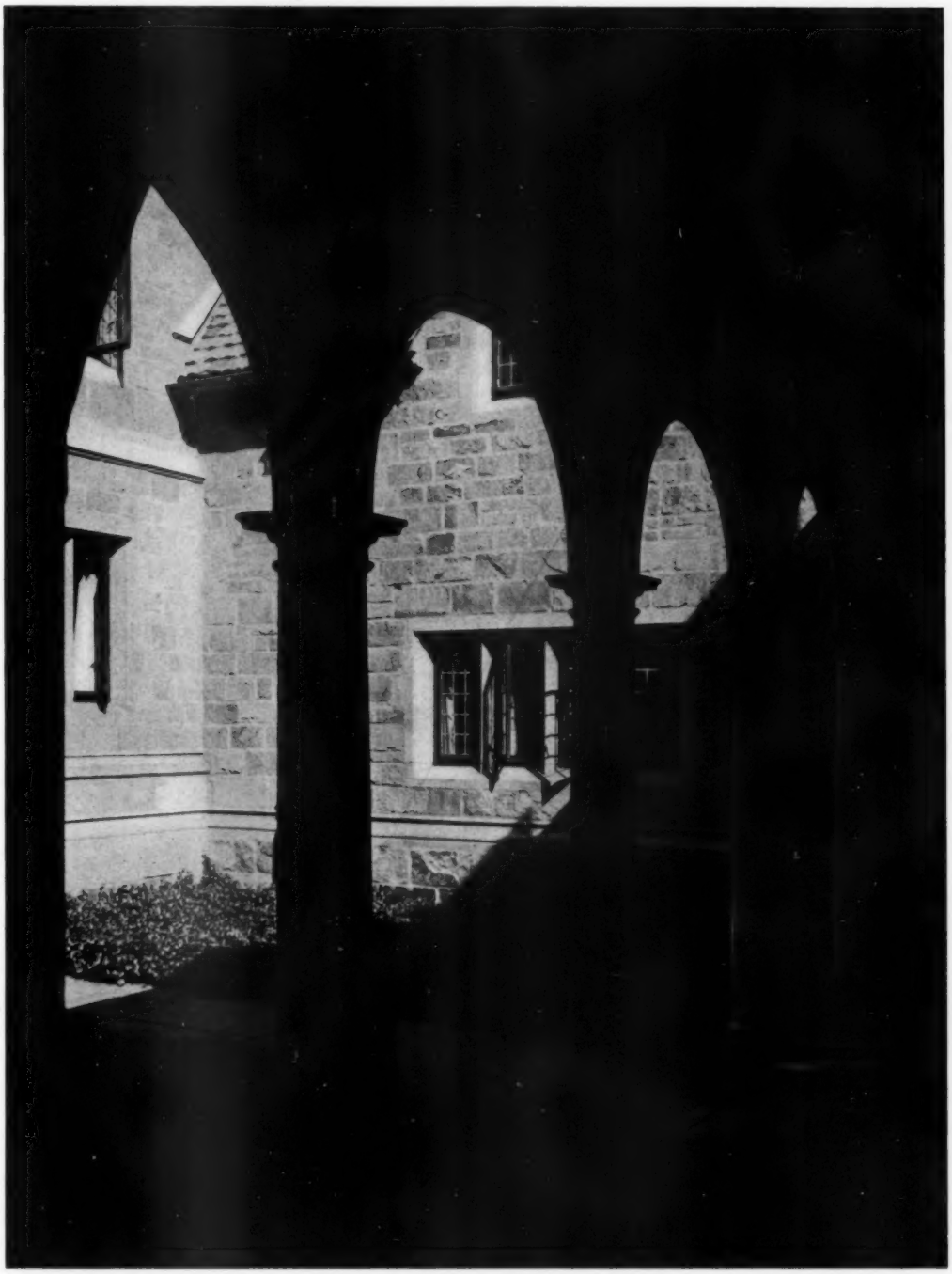

WREXHAM COURT FROM DUMMER PASSAGE

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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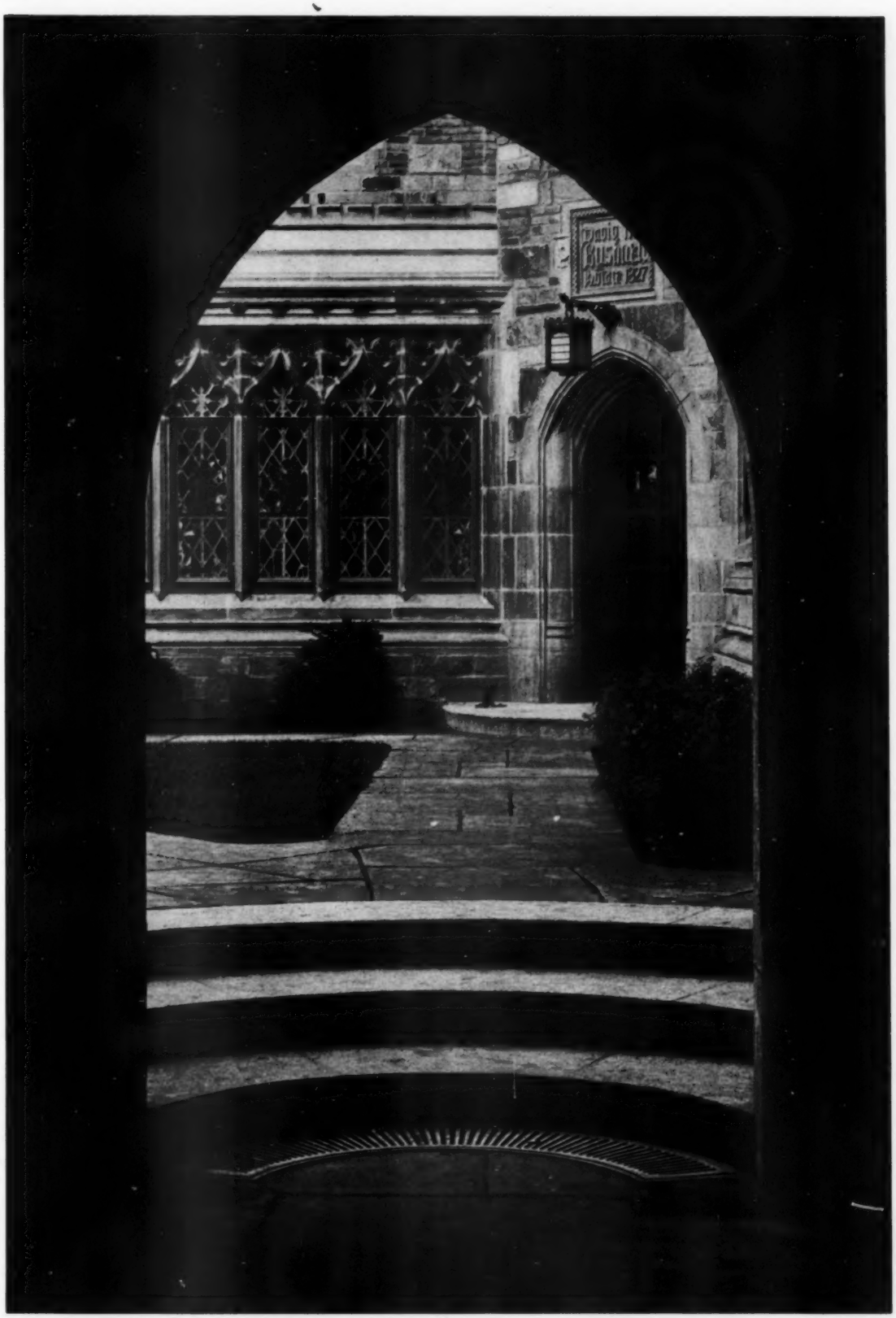
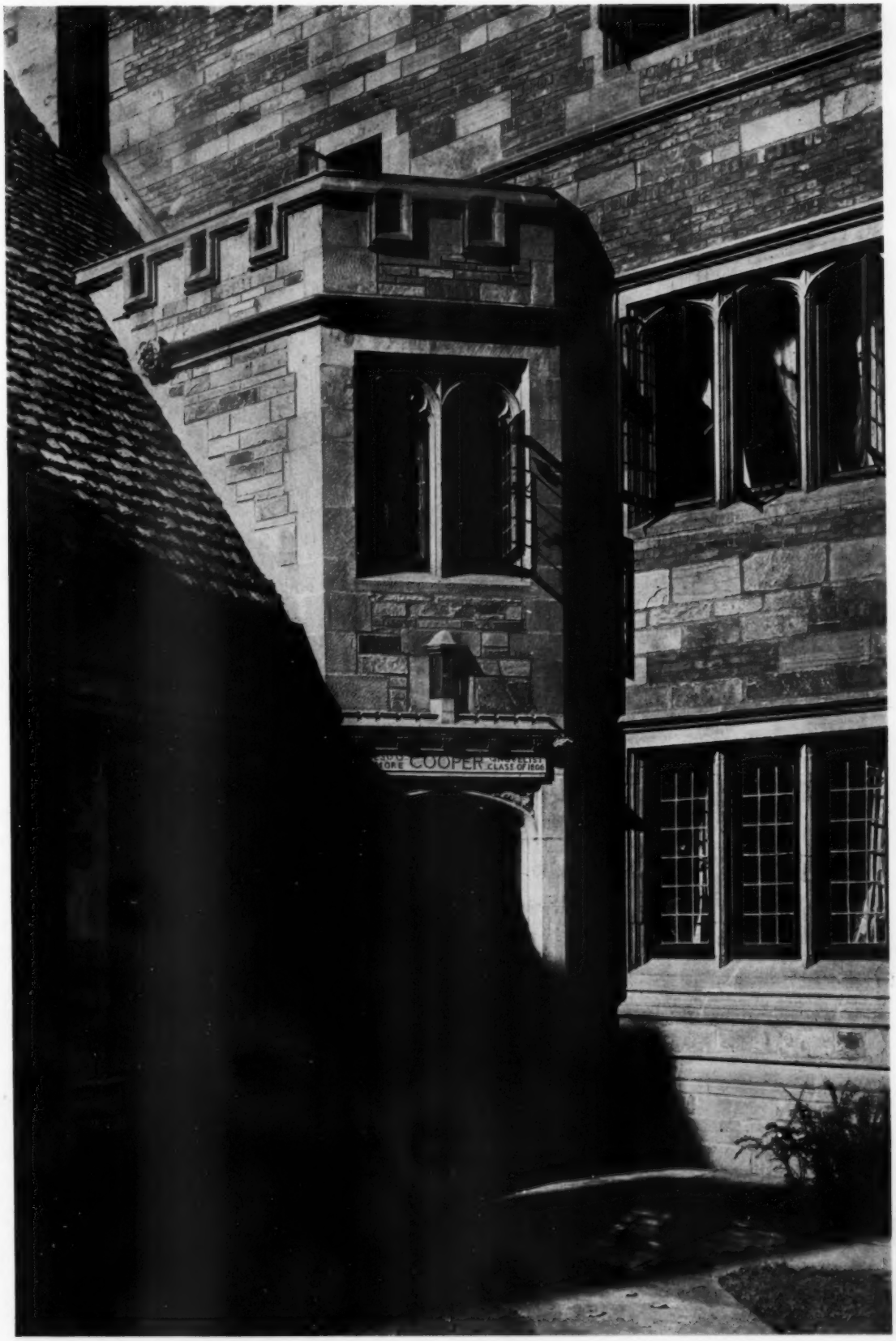


BUSHNELL ENTRY FROM DAVENPORT GATEWAY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

XUM



JAMES FENNIMORE COOPER ENTRY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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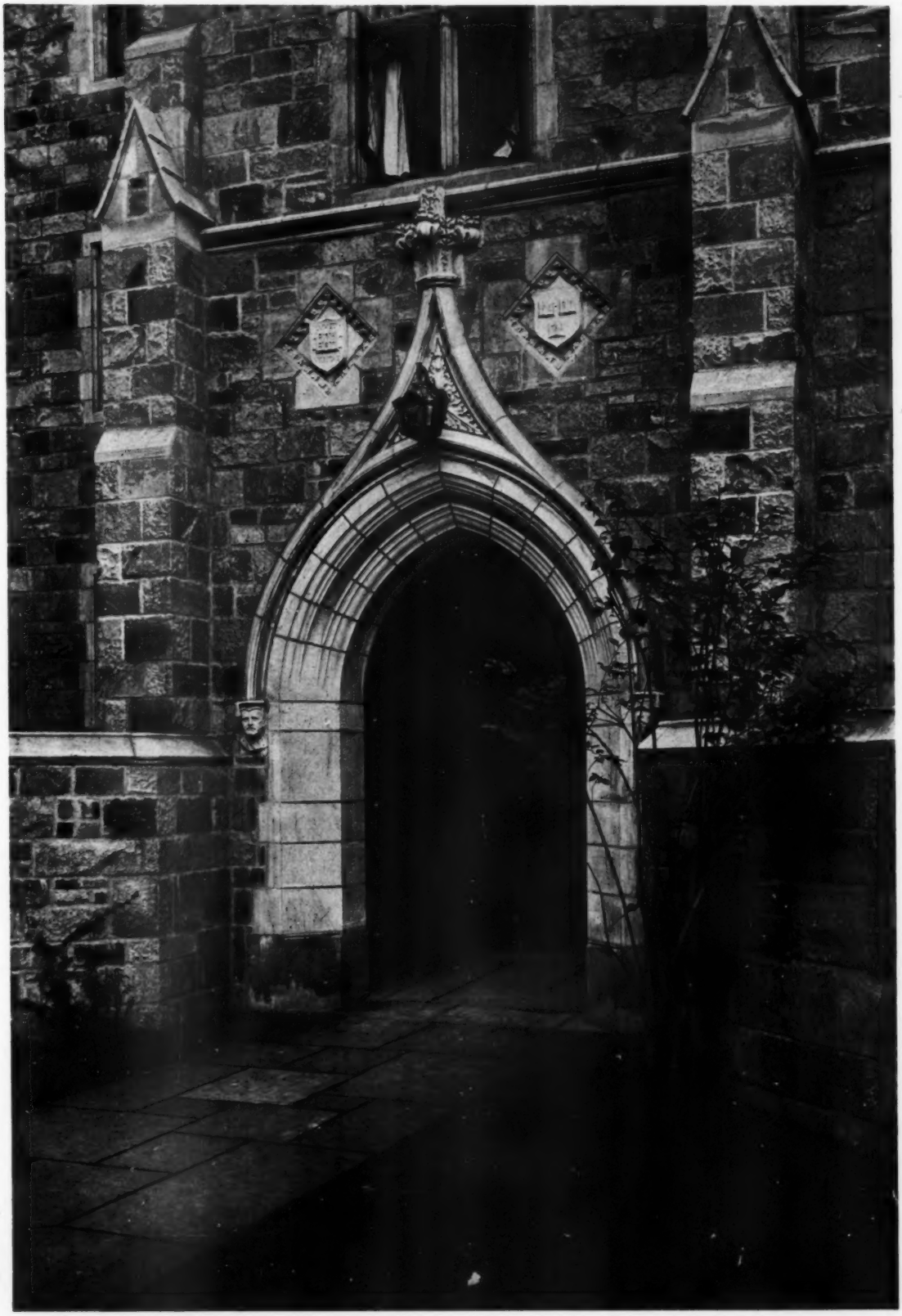

FITCH GATEWAY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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JOHNSON ENTRY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

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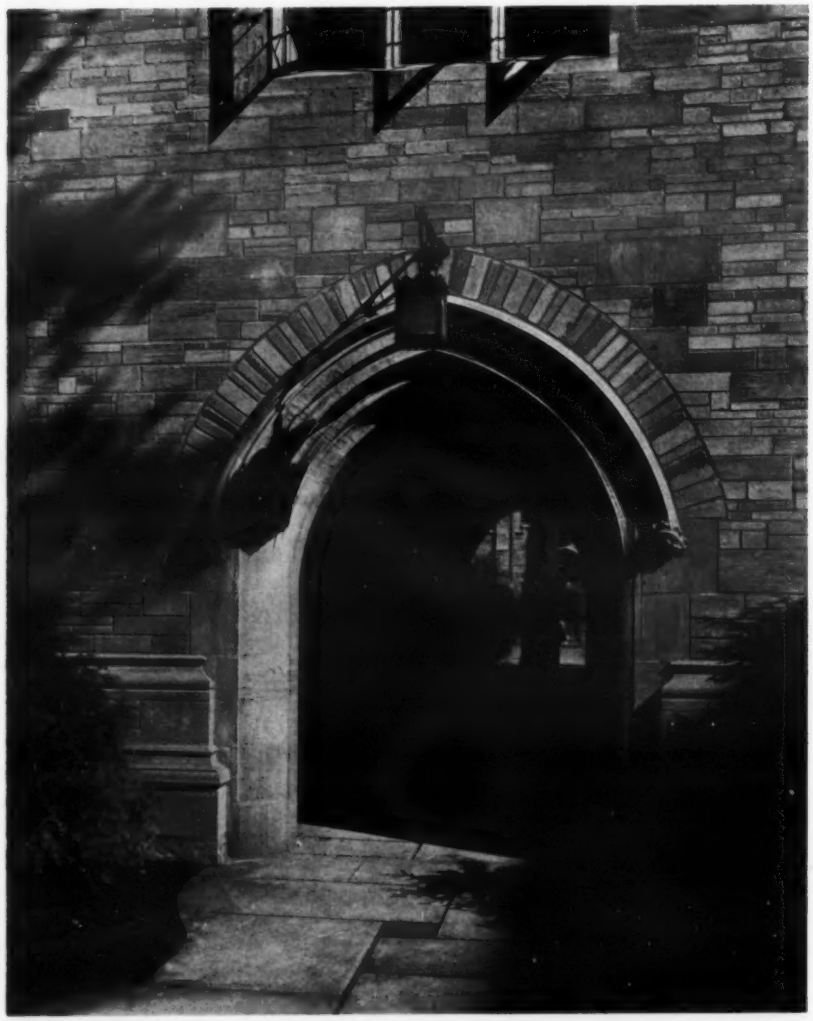
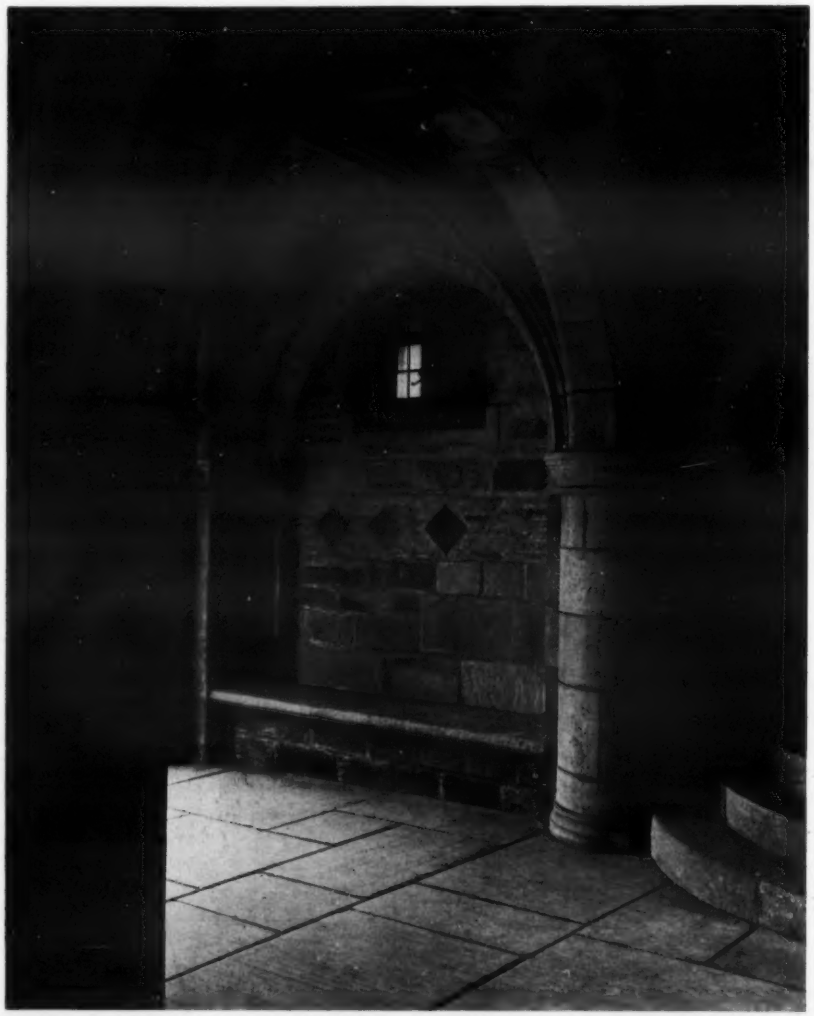


LIVINGSTON GATEWAY TO BRANFORD COURT

BUSHNELL ENTRY

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT



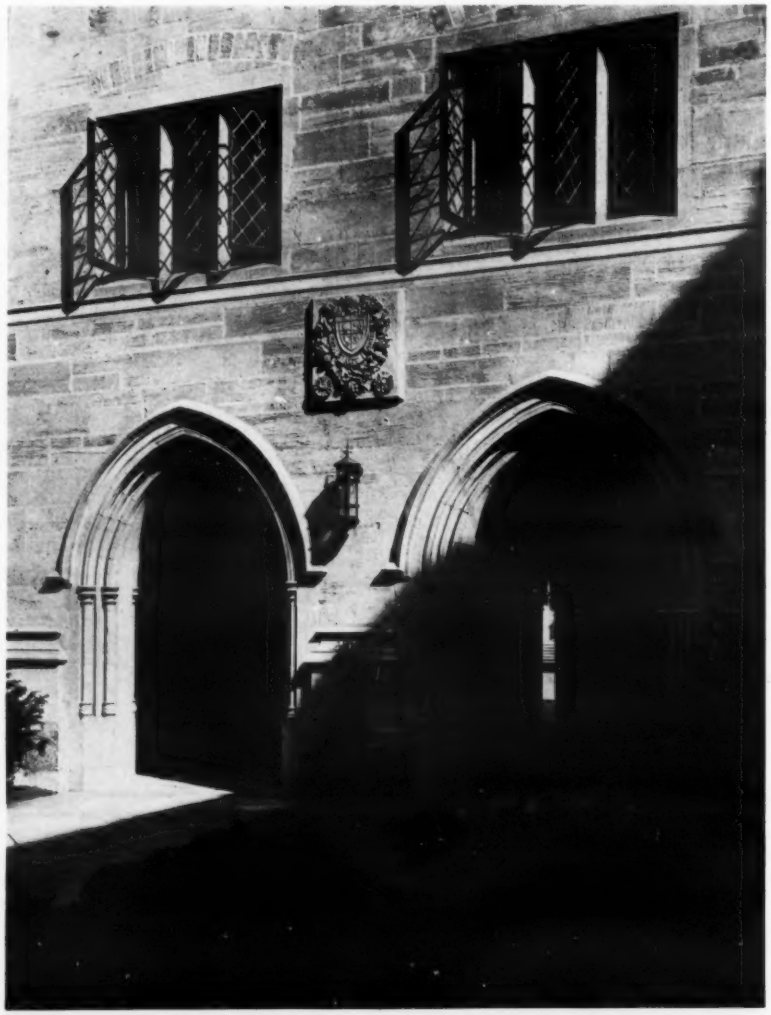
DWIGHT ENTRY

DAVENPORT GATEWAY

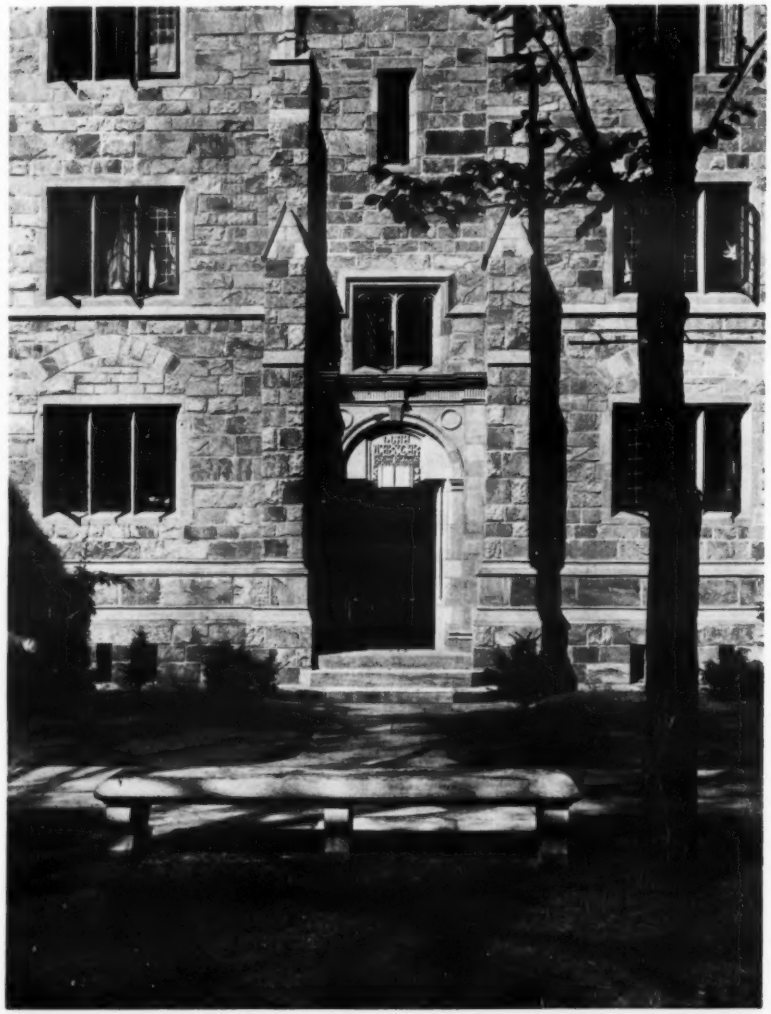
THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

VOL. CXX, NO. 2380 NOVEMBER 9, 1921



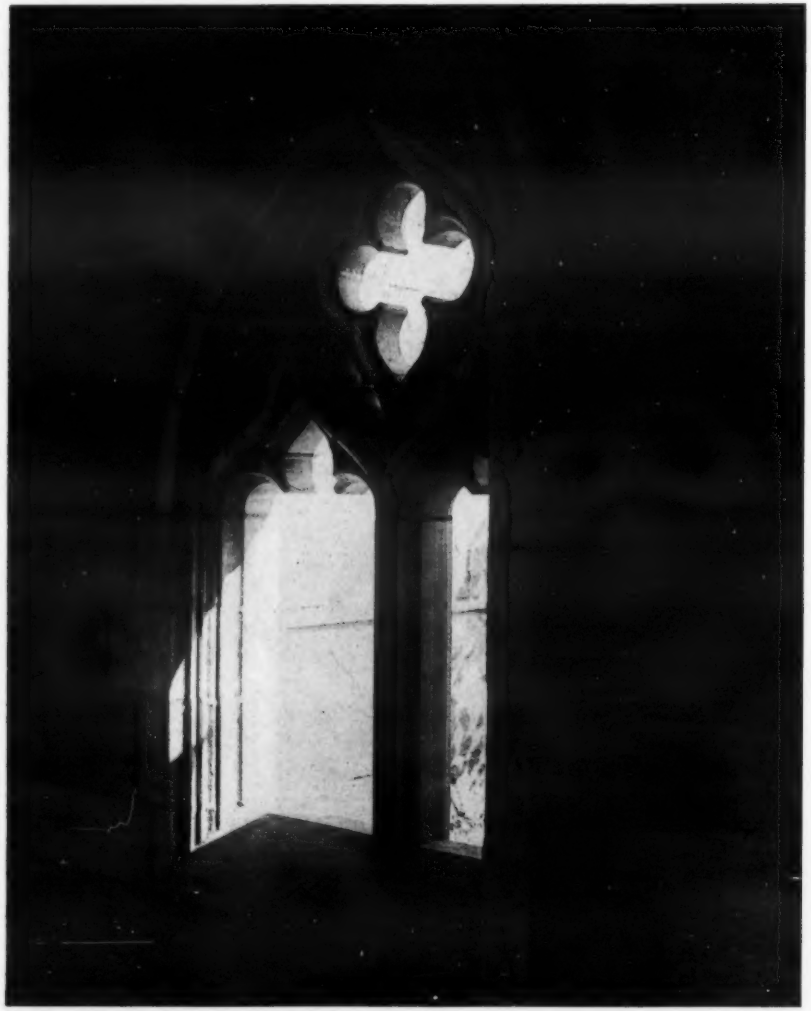
BRANFORD COURT LOOKING TOWARDS CALLIOPE COURT



WEBSTER ENTRY IN KILLINGWORTH COURT

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT



WINDOW TRACERY IN WREXHAM COURT

DWIGHT ENTRY TOWARDS CALLIOPE COURT

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

JAMES GAMBLE ROGERS, ARCHITECT

BEAUX-ARTS INSTITUTE OF DESIGN

DIRECTOR OF THE INSTITUTE, LLOYD WARREN

ARCHITECTURE, RAYMOND M. HOOD — SCULPTURE, JOHN GREGORY

INTERIOR DECORATION, ERNEST F. TYLER — MURAL PAINTING, ERNEST C. PEIXOTTO

Official Notification of Awards—Judgment of April 26th, 1921

PROGRAM

CLASS "B"—IV ANALYTIQUE

The Committee on Architecture proposes as subject of this Competition:

"AN ENTRANCE THROUGH A COLONNADE"

A colonnade connects two wings of a chateau. The center bay of this colonnade forms the entrance to the court of honor of the chateau.

The total height of the colonnade including the top balustrade is 25′-0″. The total width of the entrance motif proper shall not exceed 25′-0″, and its height, including any crowning feature that may be used, shall not exceed 45′-0″. In the entrance motif a single passage only is required, but this shall be at least 10′-0″ wide in the clear.

Architectural treatments of this sort are seen in the Chateau of Compiegne, the building of the Legion of Honor in Paris, and in the Chateau at Fontainebleau.

A. E. Thomas — Dallas Architectural Club

1st. MENTION PLACED

Class "B" IV Analytique—An Entrance through a Colonnade

Jury of Award—H. O. Milliken, F. C. Hirons, H. Chapman, A. L. Guptill, W. H. Beers, A. E. Flanagan and F. C. Farley.

Number of Drawings Submitted—129.

AWARDS—

C. H. Disque — Cincinnati Architectural Society

1st. MENTION PLACED

Class "B" IV Analytique—An entrance through a Colonnade

FIRST MENTION PLACED:—C. H. Disque, Cincinnati Archtl. Soc., Cin.; A. E. Thomas, Dallas Archtl. Club, Dallas; O. L. Warady, Atelier Hirons, N. Y. C.; J. H. Jones, George Washington Univ., Wash., D. C.; A. E. Rupp, Richmond Archtl. Club, Richmond.

FIRST MENTION:—W. E. Lominel, Cincinnati Archtl. Soc., Cincinnati; A. F. Euston, Atelier Hirons, N. Y. C.; J. H. Lapish and C. L. Nutt, George Washington Univ., Washington, D. C.; Adelbert E. Shrimpton, John Huntington Poly. Inst., Cleveland; L. S. Youngs, Pratt Institute, Brooklyn, N. Y.;G. M. Nedved, Atelier Parsons-Chicago Archtl. Club, Chicago; F. Raudenbush, "T" Square Club, Philadelphia; V. C. Edades, Univ. of Washington, Seattle.

MENTION:—E. Weston and W. McDermott, Boston Archtl. Club, Boston; H. Johnson, Atelier Cairns, Memphis; S. Pelton, J. L. Barth, V. Sberna and A. Perrella, Columbia Univ., N. Y. C.; G. M. Dennis, Atelier Birmingham, Birmingham; J. S. Wood, J. T. Blair, L. L. Broida, V. A. McGowan, Louise Barton, W. C. Pyle, A. S. Vincent and G. D. Schade, Carnegie Inst. of Tech., Pitts.; J. McNamara, B. H. Voor and J. P. Bills, Catholic Univ., Wash., D. C.; R. E. Stiffler, Atelier Denver, Denver; J. Grellinger and C. E. Meyer, Atelier DeGelleke, Milwaukee; S. W. Pike, Archtl. League of Indianapolis, Indianapolis; J. W. Hanson and L. G. Clark, Atelier Hirons, N. Y. C.; L. Chatelain, Jr., F. L. Sears, M. C. Hobson, Dorothy Sigman, L. A. Moore, J. F. Wolfe and F. A. Elliott, George Washington Univ., Wash., D. C.; F. Sakata,

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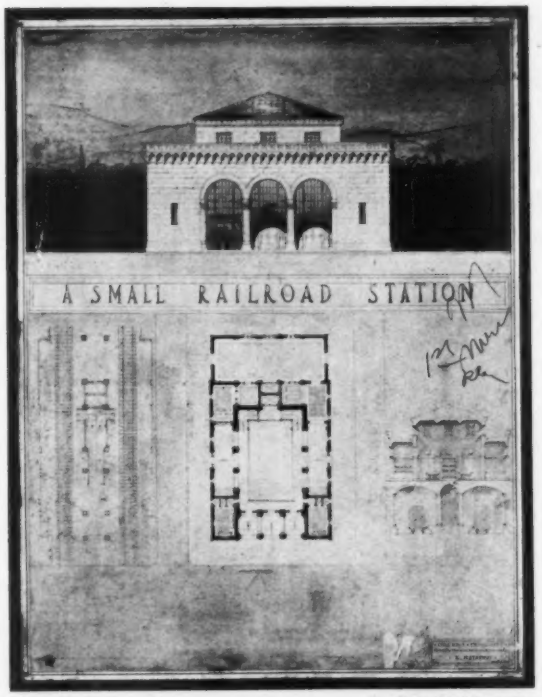
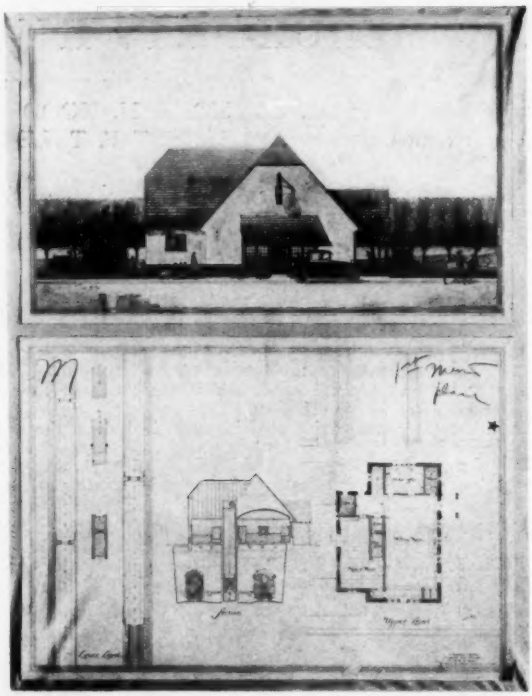


K. Matsunoi — Columbia University

1st. MENTION PLACED

Class "B" IV Projet—A small Railroad Station



J. H. Geissel — T. Square Club, Philadelphia

1st. MENTION PLACED

Class "B" IV Projet—A small Railroad Station

V. Machacek, D. Nisnosky and Dell Jansen, John Huntington Poly. Inst., Cleveland; B. L. Schlanger, Harlem Even. High School, N. Y. C.; L. E. Allen, I. L. Johnson, R. H. Johnson, F. Eiseman, H. B.Collins, D. R. Lundberg, W. M. Knezicek, C. Callahan, J. G. Rehder and J. R. Hulfield, Atelier Parsons-Chicago Archtl. Club, Chic.; R. H. Crawford, Univ. of Southern California, Los Angeles; G. F. Bennett, F. C. King, Jr., P. Becker, S. E. Chambers, A. F. Eldridge, H. T. Woolley and D. C. Doig, Syracuse Univ., Syracuse; Martha F. Doak, C. R. Gaskill, Jr., Hilda Urbantke, G. Wilson, C. G. Wright, June Hunter, E. H. Sammons, R. Ainsworth, V. D. Phenix, E. F. Webster, J. W. Lawless and Rinewell Waters, Univ. of Texas, Austin; W. W. Lund, C. W. Haas, E. R. Duckering, Jenness Bonnell, A. E. Fulton, J. C. Jordon, H. Schippmann and V. L. Annis, Univ. of Washington, Seattle; A. B. Harris, R. E. Middlekauff, A. Graves, Jr., F. X. Thorne, C. M. Van Keuren G. M. Beal, E. M. Robinson, O. F. Nicholson and L. E. Freeman, Univ. of Kansas, Lawrence; C. R. Seward, Univ. of Minnesota, Minneapolis; W. E. Herrick, Atelier Wynkoop, N. Y. C.

H. C. :—H. Silverman and L. G. Adams, Atelier Licht, N. Y. C.; H. Pembleton, 511-9th Avenue, Astoria, L. I., N. Y.; L. Mersfelder, Univ. of Texas, Austin.

PROGRAM

CLASS "B"—IV PROJET

The Committee on Architecture proposes as subject of this Competition:

"A SMALL RAILROAD STATION"

The upper level of a suburban railroad station is placed at the level of the avenue along which it faces. The two railroad tracks cross the avenue at right angles, 25′-0″ below the grade of the avenue. The track platform is located between the two tracks and is 12′-0″ wide. Access from the platform to the upper level of the station is obtained by means of stair-cases; also by two elevators, one for freight and one for passengers.

The space to be occupied by the railroad station at the upper level shall not exceed 60′-0″ in a direction parallel to the avenue 100′-0″ at right angles to it. In the station at the upper level a ticket office, a newsstand, a baggage room and the usual toilet conveniences shall be provided.

Jury of Award—R. M. Hood, L. Warren, H. W. Corbett, G. A. Licht, F. B. Hoffman, Jr., M. Flagg, C. Butler, H. I. Cobb, Jr., J. F. Harbeson, and T. W. Ludlow.

Number of Drawings Submitted—123.

AWARDS—

FIRST MENTION PLACED:—K. Matsunoi and S. Rockower, Columbia University, N. Y. C.; F. B. Smith and J. J. Keil, Carnegie Inst. of Tech. Pitts.; P. Goodman, Atelier Licht, N. Y. C.; J. H. Geissel, "T" Square Club, Phila.

FIRST MENTION:—J. Aronson, Columbia Univ., N. Y. C.; H. H. Lefkowitz, C. C. Agee, L. E. Considine, K. H. Snyder and G. A. Brink, Carnegie Inst. of Tech., Pitts.; W. H. Speer, Atelier Denver, Denver; G. S. Johnson and G. G. Greulich, John Huntington Poly. Inst., Cleveland; E. A. Beihl, H. A. Allen and C. A. Langzettel, "T" Square Club, Phila.

MENTION:—O. E. Friedhof, Cincinnati Archtl. Soc. Cin.; A. O. Angilly, I. Tron, A. M. Taylor, W. Platt, M. C. Hills, A. Marshall, E. Kaeyer, J. M. Paul, W. Conley, O. W. Wilson, F. J. Woodbridge, H. C. Porter, S. R. Moore and M. B. Mead, Jr., Columbia Univ., N. Y. C.; J. H. Delo, M. C. Bert, A. Taormina, C. J. Pellegrini, H. A. Page, E. O. Anderson, K. B. Weber, J. W. Minick, H. C. Kreisle, M. G. Uslan, C. E. Landefeld, G. O. Schoonover, H. C. Douden, N. P. Rice, J. D. Mawhinney, G. A. Fister, W. T. Spann, C. J. Billmeyer, A. A. Lewis, F. M. Highberger, J. Franklin, L. B. Christman, C. B. Marks, W. L. Gibb, Jr., P. F. McLean, H. E. Rudy, R. McKee, D. D. McGervey and F. H. Floyd, Carnegie Inst. of Tech., Pittsburgh; J. J. Carey, T. Lane, E. R. French, and R. C. Danis, Catholic Univ., Wash., D. C.; C. F. Bieler, C. H. Kellogg and R. L. Linder, Atelier Denver,

Denver; A. Wuchterl, Atelier DeGelleke, Milwaukee; W. Harris, T. R. Edwards, and H. Bradley, George Washington Univ., Wash., D. C.; H. Van Der Lyn, Atelier Hirons, N. Y. C.; E. C. Rising, L. A. Balicki, K. G. Koltukian, J. E. Miller, K. Steinbach and H. P. Whitworth, John Huntington Poly. Inst., Cleveland; W. H. Kraemer, 171 East 83rd Street, N. Y. C.; R. N. Hazlewood and C. H. Hinman, Post and Lintel Club, Minneapolis; F. K. Cheetham, G. S. Beach, R. E. Dando and J. Schierhorn, Atelier Parsons-Chicago Archtl. Club, Chicago; W. P. Crabtree, Jr. and C. I. Cromwell, Syracuse University, Syracuse; R. E. Tatum and R. R. Hibbs, Univ. of Kansas, Lawrence; M. Jenkins, Univ. of Virginia, Charlottesville; W. S. Chinn and Elizabeth Ayer, Univ. of Washington, Seattle; E. Penfield and A. Harrer, Atelier Wynkoop, N. Y. C.

H. C. :—S. Dresser and P. Simonsen, Columbia Univ., N. Y. C.; E. Hughes, L. L. Nusbaum, T. G. Tiffany, W. M. Burke, V. H. Stromquist, B. H. Lawson and T. C. Topnick, Carnegie Inst. of Tech., Pitts.; K. Sasagawa, Atelier Hirons, N. Y. C.; H. T. Plumer, "T" Square Club, Phila.

DEPARTMENT OF SPECIFICATIONS

THERE are several methods that the specification writer can use in the actual composition of his specifications and there is one method that is to be condemned (as it has been by everyone who has the slightest understanding of what good specifications consist) and that is what has been termed the scissors and paste method.

In discussing this phase of the work let us first consider the last mentioned method. To many architects there comes the temptation to prepare a new specification by changing the titles of an old one, making a few hurried changes here and there and having it re-written without reading over the text carefully to weigh each old clause in the light of conditions that must be met on the new work. As a general rule those who follow this slip-shod method are the ones who are amazed when errors of a ridiculous sort are called to their attention and furthermore are quite positive that their specifications are good enough for the reason that they do manage to get their buildings erected and equipped in some fashion, in spite of errors of all kinds.

It is mental laziness to write specifications in such a manner and cannot be too strongly condemned.

A recent specification for a high-class apartment building had a paragraph captioned "Automatic Fire Doors" under which there appeared a note that the building had none. It was somewhat puzzling at first to deduce the reason for such an absurdity, for if there were none why mention the fact unless the same rule was followed throughout the specification and everything that one could encounter in writing specifications was specifically excluded if it was not to be included. A little thought brought to mind the fact that the author of the specification had never before written one for that class of building and had used a specification for a theatre as a skeleton framework on which he attempted to hang the dress of an apartment building. The specifications were then read very carefully and earmarks of theatre construction were apparent throughout the work. Is a contractor to be blamed for holding in contempt such a specification—and also its author?

A variant of the typical cut and paste method has many merits if handled with the exercise of good judgment, by an experienced specification writer. This scheme consists in using previously written paragraphs that have been studied and developed sufficiently so that their author feels sure they satisfy every requirement of clearness and brevity. Such paragraphs generally will cover only those materials or methods that have become standard, to some extent, and whose work as specifications has been proved through previous use in construction work. The remaining parts of the specification, which will comprise all special features and particularly those peculiar to the work in hand, must be written especially. If a specification has been prepared in accordance with this latter method, under the guidance of an outline and a materials schedule and if all "standard" paragraphs have been read over carefully there is no reason why the specification should not be a good one.

Some experienced specification writers, especially those whose daily work is confined almost entirely to the work, find it quite convenient to hang up the drawings that are to be studied while writing the specifications. This method has many points in its favor, and among which may be mentioned the ease with which one can look, first at one drawing and then at another and see, at a few glances, how any particular item is presented in plan, elevation and vertical section. On the other hand, if there be a considerable number of drawings, a large amount of space will be required for the proper hanging of the drawings and, at the same time, the writer will have to do a great deal of walking back and forth which, to some, will be objectionable.

Other specification writers of experience find it perfectly feasible to spread out the drawings on a long table placed behind the desk so that all one needs to do while writing the specifications is to turn around to this table and find the drawings conveniently arranged. They may be bound or

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left loose according to the convenience desired and the number of sheets. A trained specification writer, if he has accustomed himself to this method of arrangement of drawings, will find this method satisfactory, especially when his work is of one or a few classes of construction and he knows what to expect or not to expect in the work. For any particular case it would be exceedingly difficult to determine which scheme of arrangement of drawings would be best.

However, if the specification writer goes about his work in the proper manner he will not have a great deal to puzzle his head over in the matter of how he is to arrange the drawings about him. As has been said in previous articles he should commence his specifications before it would be possible to obtain prints of them that would be of any great value to him and, of course, the only way to obtain this information will be from his outline, master specification, schedules and from circulating through the drafting room and acquainting himself with the work while it is in progress.

Then, when the specification writer wishes to check over the completed set of drawings before giving his specifications the final touch he will not find it too inconvenient to leaf over the various sheets while before him unless he prefers to hang them on the wall for any added convenience or efficiency that may result.

As to the methods of assembling of the specifications—that is, the composition of them—the judgment of the individual as to choice will be determined to a very great extent by the facilities that are at hand. For the specification writer who is learning the work or for the one who only occasionally writes them it probably will be found that the most convenient method will be to write out, in long hand, the complete document except where paragraphs can be clipped from old specifications and pasted in their proper position. In this way it will be possible to have every item fixed in its proper relative position and to refer to other sections while working on one section that may have to be co-ordinated with them.

The dictation of specifications is most difficult of successful accomplishment for anyone but the experienced writer. This can be very easily demonstrated in any section of the specification, no matter how simple it seems from a cursory study of the problem. The experienced specification writer has at his command all sorts of helps that act as guides for his thoughts and, while he dictates, he has these before him or else firmly fixed in his mind. The inexperienced specification writer or one who has not given very much attention to the systematic preparation of specifications does not have these helps and because of their absence will flounder helplessly. He must concentrate his thoughts on the things that are of immediate importance in his dictation and will find it exceedingly difficult to think of the supplementary details that one or the other sub-contractor must furnish in order to complete the installation of a particular detail in a proper manner.

Because the specification writer of little or no experience does not have the helps that one of experience possesses and, furthermore, cannot develop them without gaining more experience, he should not attempt to dictate any of his work except those parts for which he has guides or suggestions that have commended themselves to him. He will find confusion worse confounded if he does attempt to plunge blindly into the writing of a specification and will find it exceedingly difficult to correct in the field errors that have crept into his work. The only safe course for him to follow is to begin at the beginning, prepare his outline and seek all possible assistance and then step by step, build up his documents in long-hand, to a completed whole. It is only through such a method that he will be able to obtain a well-balanced specification as he will have all parts of the work constantly before him for criticism and analysis.

The specification writer who wishes to re-organize his work, abandoning all previous styles and forms to start afresh should write his first specification under the new order in long-hand as has been advised for the inexperienced writer, The piecing together of the various paragraphs will permit rigid analysis of the applicability of the various clauses, their sequence, and their relation, one with the other. Then, as the various sections accumulate, it will be possible to refer to sections previously written, not only to remove conflictions but also to assure co-ordination. At the same time reference of some sort can be indicated on outlines for succeeding sections. This might seem laborious and perhaps useless at first glance but the efforts required will produce beneficial results if the work is carefully done and the specification writer then will have some substantial basis on which his future work can be built.

One fundamental basis of good specifications is the document known as the General Conditions of the Contract. These general conditions control the acts of the owner, contractor, sub-contractor, material man and the architect and in a way, may be termed the silent watch-dog of the entire construction operations. The American Institute of Architects has published and made available to all architects and engineers a very complete and authoritative set of General Conditions that can very well be used by anyone without very great fear of a contretemps because of the blind use.

However, it is well for the specification writer to analyze these General Conditions and assure

himself that their requirements will be enforced to the letter, not only in respect to the rights of the owner or architect but to the contractor as well. There is no sense in including stipulations that will be impossible of enforcement or that one does not expect to have accomplished and, in many cases, it is injurious to the attitude of fairness and equity to all concerned to have General Condition clauses that are meaningless. This statement has been reiterated so often that it has become trite yet the underlying thought should be kept constantly in mind.

NOT very long ago there appeared in *The American Architect* a series of discussions by Mr. Clinton H. Blake, Jr., to which reference heretofore has been made. These discussions placed several warning signals in the way of free and blind use of the General Conditions mentioned above. It is to be noted that The American Institute of Architects in their "Notes On The Standard Documents" says:

> "An Agreement, Drawings and Specifications are the necessary parts of a building contract. Many conditions of a general character may be placed at will in the agreement or in the specifications. It is, however, wise to assemble them in a single document and, since they have as much bearing on the Drawings as on the Specifications, and even more on the business relations of the contracting parties, they are properly called the 'General Conditions of the Contract.' As the Agreement, General Conditions, Drawings and Specifications are the constituent elements of the contract and are acknowledged as such in the Agreement, they are correctly termed the Contract Documents. Statements made in any one of them are just as binding as if made in the Agreement.
>
> "The Institute's forms, although intended for use in actual practice, should also be regarded as a code of reference representing the judgment of the Institute as to what constitutes good practice, and as such, they may be drawn upon by architects in improving their own forms. Although the forms are suited for use in a single or a general contract, they are equally applicable to an operation conducted under separate contracts . . . . . .
>
> "In some cases the articles as printed do not include all necessary General Conditions of the Contract. The architect will then add such others as he deems wise.
>
> "Many architects include in their General Conditions one or more of the subjects named below. Most of these are better placed in the specifications for the various trades; and others, though suited for inclusion in the General Conditions, are not always needed. Among these subjects are:
>
> Bracing building during construction,
> Charges for extra copies of drawings,
> Chases,
> Checking by surveyor, and his certificate,
> Contractor to keep the work in repair,
> Contractor to lay out the work, giving lines and levels,
> Contractor to work overtime if required,
> Fences,
> Heating during construction,
> Insurance against lightning, wind storms, hail and earthquake,
> Keeping building and cellar free from water,
> Ladders,
> Lanterns,
> Offices and their furniture,
> Permission to use articles or methods other than those specified,
> Photographs,
> Protection and care of trees and shrubs,
> Protective coverings in general,
> Sanitary convenience,
> Scaffolding,
> Sheds,
> Sidewalks,
> Special cleaning other than "brown clean,"
> Stoppage of work in freezing weather,
> Telephone,
> Temporary enclosure from weather,
> Temporary stairways,
> Temporary wiring and electric lights,
> Vault permits,
> Watchmen."

The above quoted recommendations can be followed with every assurance that well studied results will be obtained. The especial point to be made is that the specification writer should be thoroughly familiar with the contents of his General Conditions and the accompanying Agreement of Contract in order that he may assure himself that nothing will be omitted and that nothing has been included that will be superfluous or that will tend to cloud any issue.

There are a sufficient number of books on specification writing that deal almost exclusively with the general conditions and articles of agreement and there is no reason why this department should add any words to those that have gone before except to remind the specification writer that in no place in all the documents that accompany and supplement the drawings does he need to be any more particular than in the preparation of his General Conditions. His judgment must, of course, be depended on to guide his actions along

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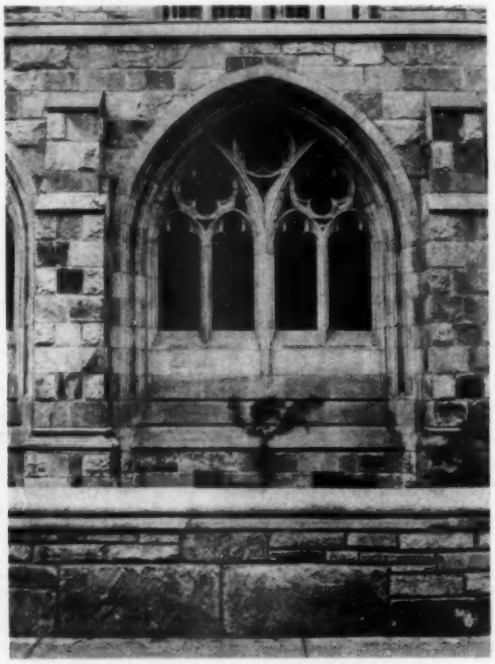
the correct channels and in subsequent articles an attempt will be made so to elucidate the art or science of writing specifications for building or engineering structures of any description that his judgment will be shaped, or will be guided, toward the proper channels.

Throughout subsequent discussions in this department numerous references will be made to matters that, of necessity, will have direct bearing on the subjects that are ordinarily treated in General Conditions in the hope that an extended description of how best to meet certain conditions will form a basis for the composition of General Condition clauses that will be to the point.

In the writing of many specifications it is necessary to include a list of Instructions To Bidders. The contents of such a list ordinarily will contain the announcement of a call for bids, a description of the work to be done and other matters that relate to the form of procedure in submitting bids and closing the contract.

This subject also is treated at great length in all books that discuss the legal aspects of the articles of agreement and the general conditions of the contract, because of their intimate connection. The conditions to be met are of such a diverse character that there seems to be no reason to discuss these Instructions To Bidders at any great length. The reader is commended to the learned discussions of those who already have prepared very good suggestions on this subject, with the repeated caution to make sure that whatever he uses will not cause difficulties or erroneous impressions. If his judgment can prevent him from taking wrong steps it is very probable that such superfluous steps he does take will have no bad effect on the conduct of the work under his specifications.

Commencing with the next issue of *The American Architect* the writing of detailed specifications for all materials, and labor and installation that are used in buildings or engineering structures will be discussed.



Window Detail on Elm Street

THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

James Gamble Rogers, Architect

LEGAL DEPARTMENT

Conducted by

CLINTON H. BLAKE, Jr., of the New York Bar

THERE seems to be a very wide-spread and continuing impression among architects, that the plans remain under any conditions the property of the architect, and that ownership thereof does not pass to the client. I have already pointed out in various writings, the fact that this is not legally true, in the absence of an agreement that the plans shall remain the property of the architect. There still seems, however, to be some uncertainty in the minds of many on this point. Within the last few weeks, for instance, *The American Architect* received a letter referring to one of my Architectural Quicksands articles, and saying that they thought the article must be in error on this point, in view of the provision of the rule of The American Institute of Architects, that drawings and specifications, as instruments of service, remain the property of the architect. Possibly a brief recapitulation of the law on this point may serve to clarify any similar misunderstandings.

The basic point to be remembered is that at common law, and in the absence of any express agreement to the contrary, the client who pays for the preparation of the plans, thereby acquires a property right in them and becomes the owner of them. The fact that The Institute adopts a rule to the effect that the plans should remain the property of the architect, does not affect the title to the plans in the slightest, unless it is agreed between the architect and the client that the Institute rule is to be followed and that the plans shall belong to the architect. No special form of contract is necessary, but there must be a definite agreement at the least whether it be in the form of letters, a signed and printed contract, or otherwise. If the parties agree that the rules of the Institute shall govern, it would follow, that the rule covering the ownership of plans would apply, even though no more specific reference to the point were made.

Of course, the better way is to enter into a contract, such as the Institute form of contract, which covers the question specifically. There can then be no misunderstanding or ground for the client, at a later date, claiming that he did not understand the agreement. If direct reference to the point be made in the contract, the question of whether or not the client was ignorant of the rule cannot arise.

The law is and has been, for many years, well settled, both in England and in this country, and was determined in New York State as long ago as 1902. The agreement that the plans shall remain the property of the architect is a reasonable one and consistent with sound policy from the point of view of the profession, emphasizing as it does the personal element which enters into the making of a design, just as it enters into the execution of a painting or a bit of sculpture.

THERE is still another and distinct question, and that is the question involving the right of the public in the plans. One phase of this question was involved, for instance, in the recently published correspondence between *The American Architect* and Mr. Magonigle. In considering how far third parties or the public generally have the right to make use of an architect's plans, to publish them or to copy them, each case must be treated on the basis of the special facts which it involves, and each situation will in all probability be somewhat different from the next.

There will have to be considered the question of whether what the law calls a "publication" of the plans has been made, that is to say, whether they have been so openly presented, that the public has acquired a right in them, and the architect, by allowing them to be presented generally or publicly, has similarly lost such right as he might otherwise have retained. It is also possible, in proper cases, for the architect to secure patent or copy-right protection, and where this is done, the case, of course, immediately passes into another class, and if the patent or copy-right is good, the protection which it gives must be generally recognized. In speaking of the publication of plans, the publication in the ordinary sense of having them printed and distributed as a book or article is published is not meant. The filing of the plans with the Building Department of a City or some similar act, opening them to the public, may in legal contemplation be a legal publication.

To summarize briefly:—If the architect wishes to retain his property in the plans as against the owner, he should be careful to see that a written agreement be made with the owner to this effect, and this agreement should be made in the first instance and before the plans are prepared and delivered and paid for. Otherwise, the owner, upon paying for the plans or tendering payment therefor, may become the owner thereof and the architect's rights therein be lost. If the architect wishes to prevent any third parties acquiring an interest in the plans, he should similarly use care in see-

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ing that no act is taken which may be construed as a legal publication, and if the situation be important enough to warrant it and the facts such as to make it possible, copy-right or even, in a proper case, patent protection should be secured.

As between the architect and the builder, the custom has been recognized that the builder, although the plans may remain the property of the architect, shall have the right to have them in his possession and use them while the building is being erected. This, of course, is consistent with common sense and the necessities for the building operation.

The cases cited this month on this page all deal with the points discussed above and include some of the earlier and basic decisions, as well as some of the more recent.

LEGAL DECISIONS

IN an action by an employe of a sub-contractor against the general contractor for damages resulting from a fall down an elevator shaft in a building under course of construction by the general contractor, it appeared that at the time of the accident, the building and shaft had been substantially completed and the doors to the shaft put in. At the request of the owner, however, a change was made to increase the headroom in the doorway. The change had been completed when the accident occurred. The Trial Court charged the jury that, under the Labor Law, of New York, if the defendant failed to provide the barrier which the law requires, this would in itself, be evidence of negligence. There was a question of fact, as to whether the general contractor had furnished a proper guard or barrier for the shaft. On appeal, it was held that the charge of the Court was erroneous, because it appeared that there was no work going on about the unguarded elevator shaft at the time the accident occurred of the character that would make the definite requirements of the Labor Law, as to the providing of protective barriers, applicable. The Labor Law in question provides in substance, that shafts and openings on each floor of a building or elevator shall be closed on all sides by a barrier at least eight feet in height while the work is in progress. It appeared that the plaintiff had been working on the change in the door ten minutes before the accident, and had just quit work to get lunch, when, in passing the shaft, he was accidently pushed into the opening. The Appellate Court further held that it was not proper to leave the jury the simple question of whether the defendant was negligent in failing to put a guard across the opening, between the time when the plaintiff left it and the time when he fell, for the reason that, under such a charge, the jury might have found that the defendant had in fact provided the guard, required by the Labor Law, but that it had not happened to put the barrier up within the ten minutes which elapsed between the quitting of work by the plaintiff and the accident, and that it was error to submit to the jury the question of "whether it was negligence for the defendant to fail to replace in so short a time as ten minutes proper barriers which it had provided, particularly when it had no notice that the plaintiff had left the place in question unguarded."

Korfanta v. Vanderbilt Avenue Realty Co. and ano., 193 New York App. Div. 763.

IN the absence of special agreement, an architect has no right of ownership in a plan furnished to, accepted by and paid for by another.

Wright v. Eisle, 86 *N. Y. App. Div.* 356.

PLANS which form an essential part of the building contract, unless proven to be the property of the architect, are deemed to be the property of the employer.

Moffat v. Scott 8 *L. C. Jur.* (*England*) 310.

WHERE various architects submit competitive designs, the architect to whom the award is tendered loses his right in the plans and the person who makes the tender is entitled to use them.

Walsh v. St. Louis Exposition etc. Assn., 101 *Mo.* 534.

WHERE an architect furnishes a plan under the rules of a contest offering a premium for the best plan submitted and is awarded the premium and receives it, the plan which he submits and the idea embodied in it become the property of the person by whom the premium is paid.

Windrim v. Philadelphia, 9 *Philadelphia* 550.

AN architect was employed by the owner to do all the things necessary in the way of designing and carrying out the building operation for a fee of 5% on the contract price. Pursuant to the employment, the architect prepared plans and over-saw the proper carrying on of the work and the owner paid him the agreed 5%. It was held that under these conditions, the property in the plans passed to the owner and they could not be retained by the architect.

Gibbon v. Pease, 1 *Kings Bench* (*England*) 810.

DEPARTMENT OF ARCHITECTURAL ENGINEERING

SOME PROPOSED INVESTIGATIONS IN STRUCTURAL ENGINEERING*

STRUCTURAL steel design is largely a mathematical process and is looked upon by many structural engineers as an exact science; nevertheless the mathematical processes are often based upon assumptions which have never been verified, and many of the mathematical operations are nothing more than the solution of empirical equations. Too often these equations lack experimental verification. The changes which are made in specifications from time to time, indicate that the concensus of opinion relative to the fundamental assumptions and relative to the empirical relationships are continually changing. Structural Engineering is, therefore, not a fixed science, but a science which is rapidly developing.

A study of the discussions which accompany changes in specifications indicates that, whereas, some revisions are the direct and inevitable result of additional scientifically established facts, other revisions grow out of a change in what is nothing more nor less than the opinion of the structural engineers. Although this opinion may be entertained by the leaders in the profession, as long as scientific confirmation is lacking, the opinion is liable to further change with additional experience. It is therefore highly important that all basic assumptions and all empirical relationships be checked by scientific experimental work.

It is believed that certain problems in structural engineering should receive further experimental study. In presenting these problems the position is taken, not that our present practice is necessarily wrong, but that we have not sufficient knowledge to justify us in forming a final and definite conclusion.

The following are a few of the many problems which affect either the cost or the safety of structures.

**Abridged from paper by W. M. Wilson, Associate Professor of Structural Engineering, University of Illinois, published in August, 1921, Journal of the Western Society of Engineers, Chicago, Ill.*

1. Effect of Reversed Stresses on Riveted Joints

TESTS of riveted joints show that the resistance to slip is due to friction between the plates induced by the tension in the rivets. Moreover this slip, an inelastic strain, occurs at stresses considerably below the stresses for which connections are designed. These statements being true, if a stress on a connection acts in one direction there will be a slip in that direction; and if the stress is reversed, the slip is in the reversed direction. By repeating the cycle, the repeated slip will result in wear which relieves the tension on the rivet and thus reduces the resistance to slip. Therefore, a large number of reversals may result in an amount of wear which will permit a small stress to produce a large slip.

That the action outlined does take place is evidenced by the fact that connections of members subjected to reversed stresses do work loose. This has been observed in a number of structures.

To establish further the action outlined, a few tests were made to determine the effect of repeatedly reversed stresses (unpublished tests made at the Engineering Experiment Station of the University of Illinois by W. M. Wilson). These tests show that connections subjected to reversed stresses, if designed in strict accordance with our present specifications, may be expected to develop loose rivets.

This being true, changes in the usual speecifications should be considered. But before the specifications can be changed intelligently, more complete knowledge relative to the behavior of riveted connections subjected to reversed stresses is needed. Experimental data are desired to answer the following questions:

1. What is the proper unit stress to be used in designing a rivet subjected to reversed stresses?

2. What is the relative value, as judged by their ability to resist reversed stresses, of rivets driven by different methods?

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3. Is it possible to develop a method of driving which will increase the ability of rivets to resist reversed stresses?

Because of the increase in the weight of rolling stock, railroads are compelled to subject their bridges to stresses considerably greater than the stresses for which the bridges were designed. Following the recommendations of the American Railway Engineering Association, the stress in tension for rating old bridges made of open-hearth structural steel is 26,000 lbs. per sq. in., while the corresponding stress in shear on rivets is 22,000 lbs. per sq. in. In both cases the allowable stresses are reduced if the stresses are reversed; the reduced stress for tension on steel is 17,333 lbs. per sq. in., and for shear on the rivets is 11,000 lbs. per sq. in., if the reversal is from a stress in one direction to an equal stress in the opposite direction.

Fatigue of metal tests indicate that a tensile stress in steel considerably greater than 17,333 lbs. per sq. in., can be reversed millions of times without breaking the metal, whereas, tests indicate that if a shear on rivets of 1,000 lbs. per sq. in., if reversed only a few thousand times, the rivets are loosened. It therefore seems probable that overloading bridges will injure the bridge, not by injuring the metal, but by loosening the rivets. This being true, an extended investigation of the behavior of riveted joints subjected to reversed stresses assumes unusual importance.

II. A Comparison of Various Types of Wind Bracing for Steel Skeleton Buildings

THE usual method of stiffening the frame of a steel-skeleton building so that it will resist wind pressure, is to make the joints connecting the girders and columns rigid, so that they can resist moment. Two types of connections are in general use. With one type, in order to erect the girders, it is necessary to slip the gusset plate, a part of the column, between the flange angles of the girder. As this operation takes place high in the air, the erection is quite difficult. With the other type, erection is accomplished by swinging the girder between two adjacent columns, and riveting the outstanding legs of the connection angles to the outstanding legs of the column, a very simple process. In spite of the fact that the first type is much harder to erect than the second, the former is replacing the latter, as it is believed to be more rigid. A very limited number of tests (Bulletin No. 104, Engineering Experiment Station, University of Illinois, by Wilson and Moore) show that there is but little difference between the rigidities of the two types of connections; and that, if there is any difference, the second is slightly stiffer and therefore better than the connection of the first type. It is desirable to determine definitely the relative merits of these two, and also of other types of connections.

III. Distribution of the Stresses Among the Rivets of Large Gusset Plates

IN designing a riveted connection which is not subjected to moment, it is assumed that the total stress on the connection is equally distributed among the rivets. Gusset plates are usually much wider than the members from which they receive stress. Under these circumstances, it seems probable that the stress in the rivets in a line with the axis of the member may be greater than in the rivets near the edges of the gusset plate.

In riveted joints, as in elastic material, the stress is approximately proportional to the strain. Because of the difference in stresses in the gusset plate and in the member, the slip, the relative motion between the two, may not be the same at all points. As the stress depends upon the slip, a variation in the slip will cause an uneven distribution of the stress among the rivets.

A limited number of tests by Cyril Batho (Journal Franklin Institute, Vol. 182, page 553) indicate that the stress on a joint is not evenly distributed among the rivets. The maximum stress will, therefore, be greater than the total stress divided by the total number of rivets, as now assumed. A thorough investigation of the distribution of stress among rivets is desirable.

IV. Effect of the Restraining Action of the End Connections Upon the Stringers of Through Truss Bridges

THE stringers of through trusses are connected to the floor beams by means of connection-angles which run the full depth of the stringers. Tests show (Bulletin No. 104, Engineering Experiment Station, University of Illinois, by Wilson and Moore) that these connections are quite rigid. This being true, two stringers meeting end to end act as a continuous girder. While this action reduces the moment at the center of the stringer, it also produces a large, suddenly applied moment on the stringer connection. And the stringer connection is not designed to take moment. It is desirable to determine the moment on the connection-angles and, if it is found to be dangerous, to devise alternate possibilities of design.

V. Effect of Not Fitting the Ends of Intermediate Stiffness of Plate Girders to the Outstanding Legs of the Flange Angles

STIFFENERS of plate girders are fitted carefully to the flange angles. This involves grinding the ends of the stiffener angles to exact length and shape, and involves either the use of thick fills

or of crimping the angles. Taken altogether this fitting adds materially to the cost of the girder.

The function of intermediate stiffeners is to prevent the web from buckling. The stiffener does not in any sense transfer stress to or from the flange angles. It would therefore seem that the requirement that the ends of intermediate stiffeners be ground to fit the outstanding legs of the flange angles is without a rational basis. It is desirable to make tests to verify this statement.

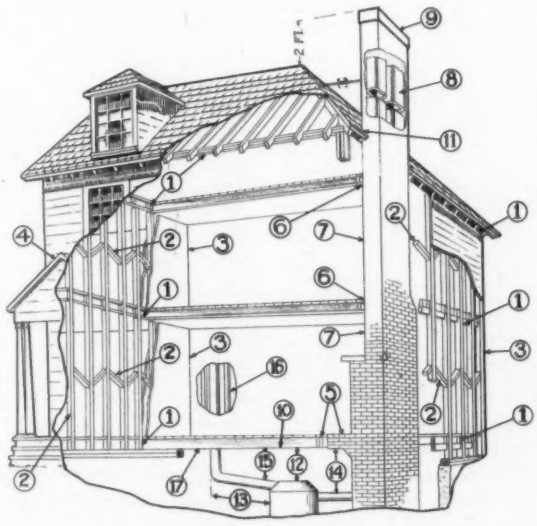
VI. Mathematical Study of Secondary Stresses

THE exact theoretical determination of secondary stresses is a very laborious process. This is true to such an extent that secondary stresses are neglected except for very important structures, in spite of the fact that it is known that, theoretically at least, secondary stresses are often almost as great as primary stresses. It is desirable to make a careful study of secondary stresses with the idea in mind of establishing empirical rules for determining secondary stresses. These rules should be accurate enough for purposes of design and should also be so short that they will be used by the practicing engineer. Such rules have been established for wind stresses in steel skeleton buildings (Bulletin No. 80, Engineering Experiment Station, by Wilson and Maney) and it should be possible to establish them for secondary stresses in trusses.

(To be continued.)

MODERN DWELLINGS OF WOOD

THE accompanying figure showing details to be followed in constructing a fire resistive frame dwelling is one prepared and distributed by the National Lumber Manufacturers' Association. It emphasizes items which have been recommended for many years as good practice but often slighted or omitted because of the undue importance given to first cost. Were all frame dwellings designed and construction supervised by architects the owners of these buildings would receive more for their money. For example the herringbone bracing between studding is regarded as bracing alone and is often omitted when diagonal sheathing is used. This bracing should be as wide as the studding in order to close the space and confine fires in the walls to limited areas. Covered with not less than one inch of mortar spread to fill the hollow space between plaster and sheathing, or weatherboarding in case sheathing is omitted, a more effective protection is obtained against flames and the wall in addition is divided into air insulated spaces which make it warmer in winter and cooler in summer. The embedment of metal lath in the mortar stops rats from travelling from floor to floor. The fire stopping at all intersections of walls and partitions with floors, ceilings and roof should be similarly treated with mortar and metal lath. The drawing should be studied and the suggestions put to use whenever a frame dwelling is designed.



(1) Fire stopping at all intersections of walls and partitions with floors, ceilings and roof.
(2) Herringbone fire stopping in partitions midway between floor levels.
(3) Partition and wall corners framed solid.
(4) Wall between porch attic, and house sheathed solid.
(5) Header beams 20 inches from the fireplace breast. Incombustible hearth.
(6) Wood members 2 inches from chimney, space between filled with loose incombustible material.
(7) Plaster applied directly to chimney breast.
(8) Flue lining in chimneys.
(9) Top of chimney 2 feet above peak of roof.

The National Board of Fire Underwriters reported for the year 1918 that more than 40 per cent. of the dwelling house losses came from "strictly preventable" causes, as contrasted with 23 per cent. for losses on all classes of property. In other words, "strictly preventable" causes, meaning inexcusable carelessness, constituted nearly twice as large a factor in "home" fires as in the

average of all fires. The reports of underwriters for 1918 show that 65 per cent. of all reported fires occurred in dwellings and that the loss represented 28.5 per cent. of all damage.

For the year 1913 the per capita annual fire loss in the United States was reported to have been $2.10 as compared with 49 cents in France, 33 cents in England, 28 cents in Germany and 11 cents in Holland. The fire loss in the United States is exceeded only by that in Canada, it being a curious coincidence that these two nations lead the world in the use of all-wood dwellings. The per capita fire loss of the United States for the period of 1914-1919 was $2.71. The per capita loss for the year 1920 was reported to be $4.73, the re-adjustment of business conditions being held responsible for a rise in the insurance factor known as the "moral risk." The figures quoted do not include the expense of maintaining fire departments, water supplies for fire protection purposes and expenditures of organizations in fire prevention work. Nor are the available statistics complete as it is impossible to obtain information on all fires. The losses are undoubtedly larger than published reports indicate.

The 1921 Report of the Committee on Statistics and Origin of Fires, of the National Board of Fire Underwriters contains data from 341 cities in the United States having a population of 20,000 and upward. The fires are classified for the period 1914-1919 under, Brick and Stone buildings, Frame buildings and Other than Building Fires. One hundred and nineteen cities reported the numbers of each class of buildings as well as the number of fires in each class. From these cities fires were reported in 13,494 brick and stone buildings out of a total of 749,383, which is 1.8 per cent. From the same cities fires were reported in 20,622 frame buildings out of a total of 1,328,502, which is about 1.5 per cent. These percentages would no doubt be greatly altered were complete statistics obtainable from all villages, towns and cities, for the best available information indicates that of all dwelling houses in the United States not less than 83 per cent. are frame.

Frame buildings are those with outside walls of wood. Brick and stone buildings differ from frame buildings only in the walls, as a rule. There is as much wood used otherwise in the interior. In the United States, wooden dwellings will be constructed until increasing cost of lumber eliminates the cost differential between frame and brick wall. The American people like them and they are an American tradition. It is the duty of the architect as such to educate builders of frame houses to make them as fire-resistive as possible.

The figures show that fire resistive construction is only a beginning. Of all the causes of known fires in dwellings, 42 per cent. fall in the "strictly preventable" or "carelessness" class, 34 per cent. fall in the "partly preventable" or "lack of intelligence, accidental and criminal" class, which leaves 24 per cent. of known fires as due to "unknown causes," these being probably largely preventable. Fire resistive construction reduces the amount of loss by fire and lessens danger of conflagration but does not reduce the number of fires. Education alone will do this.

The relative per capita annual fire losses in the United States and France for the year 1913 are better understood by members of the 1917-1919 American Expeditionary Force than by people who did not get over to France. The French are frugal, nearly all dwellings are warmed by fireplaces and most of the French heating stoves are ridiculously inadequate from the viewpoint of an American. Central heating is almost unknown and a temperature considered by the average Frenchman and his family as endurable, drove his "locataire" to the cafes and estaminets for comfort. Thousands of fires occurred in French homes when the billetted soldiers attempted to heat their quarters to temperatures they were accustomed to at home. Nearly all the fires were caused by defective flues and chimneys, as many of the offices and billets occupied by our forces were supplied with modern British or American stoves. Roaring fires in fireplaces frequently burned houses down, for in many places in France masonry was laid up in mud instead of lime mortar. Fully as much wood is used in the interior of French houses as in American houses and it is dry and tindery because many houses are very old. The people are thrifty and careful and it is largely due to these traits that fire losses are smaller in France than in America.

Furthermore every fire in France is investigated and some one must pay. The man found responsible, if one may credit the statements of responsible French Officials, is punished and may also have to pay for the time of the extra policemen used as a guard while the fire is being fought; for the time of the firemen and rental of the fire fighting apparatus; for the water used in putting

(10) Protection over heating plant.
(11) Roof framing 2 inches from chimney, flashed, permitting free movement of chimney.
(12) Top of heating plant 15 inches from ceiling.
(13) Furnace 8 feet from warm air riser.
(14) Smoke pipe 1½ times its diameter below the ceiling.
(15) Heat pipes 6 inches below ceiling.
(16) Doubled tin pipes, ½-inch air space between, in partitions, kept 1 inch from all woodwork. Steam and hot water pipes 1 inch from woodwork.
(17) Heat pipes running through floors, fire stopped with loose incombustible material.

Essential Details for Wooden Dwellings

out the fire. He may be sued by neighbors who suffered damage during the fire and by adjoining storekeepers who suffered loss of trade while the crowd blocked access to their shops. If he is guilty of gross carelessness the landlord may sue him for damages and cancel the lease. Wherever he goes insurance rates will be increased on any building he may occupy and on adjacent structures. It is stated that similar laws exist and are rigidly enforced in all European countries. It must be so, for there are fire traps in European cities in spite of brick and stone walls and tile roofs. The narrow crooked streets increase the difficulty of fighting fires yet the loss by fires in Vienna in 1913 is said to have been one-eighteenth as great as in Chicago, a city having the same population, for that year.

Stainless Steel and Iron

ABOUT eight years ago a method was discovered in Great Britain for making stainless steel and iron. The result was the revolutionizing of the Sheffield cutlery trade. Thousands of members of the American Expeditionary Forces brought home souvenirs from England, France and Belgium in the form of knives with blades of stainless steel; knives made to cut and which look better than the nickel and silver plated American knives which do not cut.

It is now reported that the production of stainless iron in Great Britain is keeping pace with the production of stainless steel. Stainless iron has been largely used for the production of golf clubs; it has attracted the attention of makers of stove grates and is being used for kitchen ranges, grates, and fenders. An important and useful direction in which the material has been applied is in the fitting of motor cars; it is supplied in sheets for making hoods, and there is in contemplation its greater use for bodies and, since it does not tarnish, for replacing nickel-plated parts. It is made up into a wide variety of kitchen utensils and is used for shop signs and door plates. One British firm is producing the material in wire form, to be made up into door mats, and it is also being used for spring mattresses.

Another important development in contemplation is the use of stainless iron for the furnishing of railway carriages, engines, and rolling stock generally. The proposal is that it should replace brass for door handles, brackets, and many other fittings. Meanwhile if stainless iron and steel are being made or used in the United States, there is a singular reticence manifested by the advertising departments of the concerns interested.

Formula for Strength of Rope

AT the Bureau of Standards laboratories in the Department of Commerce, tests have been made that have resulted in the following formula:

For three-strand regular lay manila rope from ½ to 4½ inches in diameter, the average breaking load in pounds equals 5,000 times the diameter of the rope in inches, multiplied by the diameter of the rope increased by one.

The working load or the load that a contractor or safe-hauler may apply with proper safety and precaution must be considerably less than the load given by the formula.

Other data on rope are contained in Technologic Paper of the Bureau of Standards No. 198, by A. H. Stang and L. R. Strickenberg, which has just been issued.

Common Sense in Economics

IN 1896 the Free Silver movement was defeated as the result of a campaign of education. Today many unsound hypotheses are being exploited and at no time since 1896 has there been manifested so general an interest in economics. A campaign of education should be conducted now so the public will be able to judge the merits of controversies filling the pages of the daily press. One drawback is the lack of simply written text books which stress essentials. The editor of the Valve World wrote a series of articles on the basic principles of economics and they excited so much interest that they were reprinted in book form. The book, "Common Sense Chats on Political Economy," is well worth reading. Copies may be had free of cost by addressing the Valve World, Crane Company, Chicago, Ill.

Thermal Conductivity and Diffusivity of Concrete

A BULLETIN with the foregoing title has been prepared by A. P. Carmen, Professor of Physics and R. A. Nelson, Assistant in Physics, Engineering Experiment Station, University of Illinois, Urbana, Ill. It is an illustrated report of experiments, with a summary of results and conclusions. According to the authors, as a result of the rapidly increasing use of concrete in various forms of construction it has become important to have some definite information as to the thermal conductivity and diffusivity of different concrete mixtures. During the last ten years the composition and methods of preparation of concrete mixtures have been studied and standardized, and present investigators have had the advantage of dealing with concrete mixtures which can be described much more definitely than was possible a few years ago. The results of only a few determinations of the thermal conductivity of concrete have been published previously, and to a large extent these lack definiteness in regard to the composition and method of preparation of the material. The bulletin is No. 122 and the price is 20 cents.

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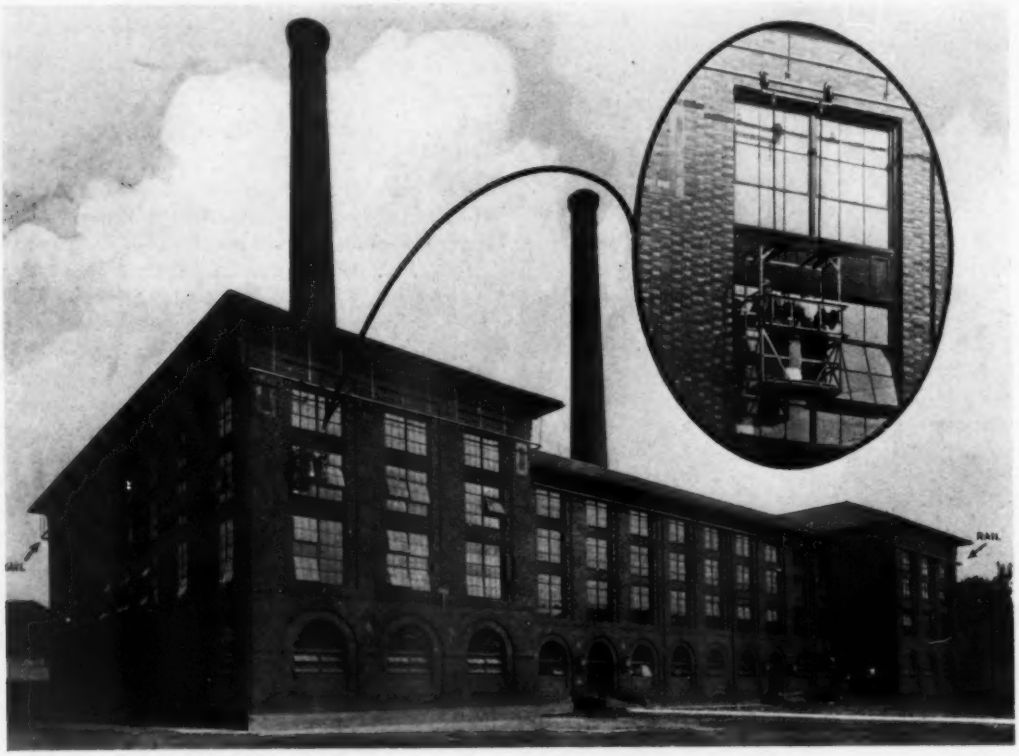
The Window Washing Problem

THE use of glass in walls is so beneficial in many ways that no question is raised today concerning it. The square foot cost is so close to that of any other wall material as to affect but slightly preliminary estimates of cost. The only drawback is the cost of cleaning if the greatest benefit is to be obtained from the transparent material.



A Permanent Installation for Washing Windows

This cost varies with the character of the industry and in some lines of business it is said to be cheaper to let the glass go without cleaning and reglaze the sash at intervals of three or four years. The reason for the high cost is usually the lack of facilities.

The accompanying cut shows how the problem was solved on the Division Street Water Station, Cleveland. The height of the building is 60 feet and the walls contain 4,600 panes of glass. The suspended tramrail enables two men with ease and safety to clean windows and walls, replace broken glass and paint sash and downspouting. The carriage travels around the entire building and is raised and lowered by means of a double winch. It is stated that windows are now washed at a saving of two-thirds the cost of the former method used, besides which the work is performed more frequently.

The suspended rail may offend the artistic sensibilities of some designers but the principle is sound. With some study it should not be difficult to design cornices to carry a concealed tramway rail and this piece of equipment should form part of every building with large areas of glass in the walls.

Ideal Brick Wall Not New

THE Common Brick Manufacturers' Association of America states that from the Republic of South China comes word that the Ideal wall has been used in that semi-tropical climate for hundreds of years; and dwelling houses upwards of fifty years old with Ideal walls in the cold country of Sweden are considered ideal to live in by their occupants.

AMONG the new items for the specification writer may be mentioned luminous house numbers. They are approximately 3-in. high and are of a cream color during the day. During the night they have an intense glow visible at a considerable distance. They are guaranteed to glow in the dark for at least five years.

Relative Values of Dry Kilns

ALL dry kilns now on the market are either progressive or compartment kilns. In the progressive type the drying conditions increase in severity from one end of the kiln to the other, the material being moved into severer conditions as it dries. In the compartment type the same temperature and humidity prevail throughout the kiln at any one time, beginning with mild conditions and increasing in severity as the material becomes dry.

The kiln-drying data and experience of the Forest Products Laboratory, Madison, Wis., indicate that each type has particular advantages on certain points, as follows:

The progressive type of kiln requires less skill of the operator, and reaches its greatest heat efficiency in drying from the green state. It is most useful in circumstances which permit of its being supplied continuously with green lumber of one thickness and class. It is, however, impracticable with this type of kiln to give individual attention to special loads of lumber.

The compartment type of kiln is more flexible and is better adapted to meet the varying requirements of different kinds of material. It is most useful where exact and careful drying is required, as in the handling of refractory woods.

Wood Acids

IT is stated on the authority of the Forest Products Laboratory, Madison, Wis., that the amount of acid normally present in any native wood is not sufficient to warrant its rejection for any purpose involving contact with metals.

In the research of the Forest Products Laboratory, only three chemicals correctly called acids have been found existing free in wood; these are tannic acid, acetic acid, and formic acid. Tannic acid is very feeble and has very little corrosive action on metals. The other two acids are also feeble in comparison with sulphuric, nitric, or hydrochloric acids.

A very small amount of acetic acid and a still smaller amount of formic acid apparently exist in all native woods, probably as the result of a slow action of water on wood at ordinary temperatures. All native species are also alike in that both of these acids can be produced very readily from them by the simple action of steam or hot water, a reaction for which there is no simple preventive treatment. Acids formed in the wood by the agency of steam or hot water are doubtless responsible for the results frequently attributed to acid supposed to have been in the wood originally.

BOOK NOTES

The Clerk of Works*

A man who writes specifications should be thoroughly trained in office practice and with some experience in supervising construction. A man who supervises construction should have a sound knowledge of materials and their fabrication into structures. Some training in structural design will be helpful. Proper training in structural design should be based on a thorough foundation course in mathematics and physics.

Counting upon a resumption of building activity in the near future, a number of publishers are issuing books for popular consumption, on the planning and construction of buildings. The one under review "Modern Building Superintendence and the Writing of Specifications" is an attempt to prepare young men lacking in basic knowledge, to perform the duties of a clerk of works or superintendent of construction. The style is that of a lecturer in a popular lecture course or a megaphone carrier on a "sight-seeing" wagon. One cannot deny that the author is possessed of a knowledge of his business. The pity is that he regards his profession so lightly, assuming him to be an architect, as to profess to believe that this book is of real value as a text on the important subject with which it deals.

Superficiality is the curse of today and the professions of architecture and engineering contain too many men who know just enough to "get by." Bribery and corruption are the logical results of putting men imperfectly trained, in positions of responsibility. Architects insist upon having proper foundations for buildings. They should insist as rigorously upon their aides having as a foundation for professional training a sound knowledge of and real information on the materials and processes of building construction. The architect is not wholly a designer; he is also the "Master Builder" and adequate training for so dignified and honorable a calling cannot be obtained from the reading of books written in the style demanded for the pages of popular magazines.

**Modern Building Superintendence and the Writing of Specifications. By David B. Emerson. New York, Charles Scribner's Sons. 247 pp. 4½x6¼ in. Cloth. $1.75.*

The Electrical Code*

THE National Electrical Code is a fine example of standardization of practice. It was written to safeguard life and property by competent men and was accepted willingly, even

**The Code at a Glance. By Hubert S. Wynkoop, M. E. 96 pp. Pocket form. 3x7 in. Flexible covers. New York, National Association of Electrical Contractors and Dealers. $1.00.*

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cheerfully, because every modern house is supplied with electricity. The demand for electrical installations was sudden and insistent allowing architects and builders but little time to post themselves on electrical theory. From the first safe practice was insisted on and the code is free from compromises and serious defects because the authors and annual revisionists were, and are, free from interference of men with half knowledge and men with special interests to forward. Would that the same could be said of building codes!

Code violations more often result from difficulty in correlating various sections than from intention to do wrong. Mr. Hubert S. Wynkoop, M. E., in charge of electrical inspection, city of New York, after reviewing thousands of code violations that came to his notice during the past twenty-five years, conceived the idea of compiling code requirements in alphabetical form, freely cross-referenced. The completed work is in handy size and shape to be carried in an upper vest pocket. Code requirements are grouped under correlating subjects in the form of chapters and then alphabetically arranged. The work has been well done and the handy glossary defining words and terms that are often misinterpreted gives to all users of the National Electrical Code a useful guide.

Engineering Construction*

THE third edition of the first volume of Engineering Construction by Prof. Warren deals with steel and timber. It has been carefully revised and results of recent experiments on materials and structures have been included. References to American authorities are so frequent that it is a useful text in this country even though the author is an Australian. Following a discussion in two chapters on the physical and mechanical properties of steel and timber, there are chapters on the mechanics of structures and the design of beams, girders, columns, trusses, etc., and proper connections for same. A knowledge of engineering mathematics is assumed. On the subjects treated it is a compact and satisfactory text book preliminary to practice.

**Engineering Construction. Part I. Steel and Timber. By Prof. W. H. Warren. New York, Longmans, Green & Co. Third edition. 1921. 486 pp. Ill. 6x9¼ in. Cloth. $10.00.*

The Designing of Hospitals*

CONSTRUCTION news reports indicate that much hospital building is contemplated for the coming year, with many hospitals now under construction. The time is opportune for the new edition of Stevens' treatise on the development of medical institutions, both in Europe and in America, since the beginning of the present century. The author states that the original text has been thoroughly revised and much new matter added, together with over one hundred and fifty new illustrations. It is a satisfying work on the planning and design of modern hospitals and contains nearly five hundred illustrations, including plans, details and photographs of what the author, as the result of wide experience, believes to be good examples.

**The American Hospital of the Twentieth Century. By Edward F. Stevens, Architect. 380 pp. Ill. 7x10 in. Second edition, revised and enlarged. New York, The Architectural Record Company. $7.50.*

Brick*

ACCORDING to archæologists brick has been used as a building material for not less than ten thousand years. Notwithstanding complaints of architects and builders it was impossible to compel brickmakers to agree upon a standard size until the year 1920 A. D. This oldest of modern building materials felt the competition of young modern standardized clay tile and concrete blocks and the standard 2¼x3¾x8in. brick was adopted.

Stucco on wood and metal frame walls appeared as a formidable competitor on the score of cost and the friends of brick developed the "Ideal" wall, a form of construction for which great economy in material is claimed. "Everybody knows brick" proved to be a good advertising slogan and the brick buildings to be seen on all sides apparently prove the truth of the statement.

The average home builder, however, finds that estimates of cost for brick buildings of moderate size are difficult to obtain, while advocates of other materials are always ready to give figures which are very satisfactory. The brick manufacturers are now manifesting great interest in small houses and the third edition of the book on brick by William Carver, Architect, is on sale. This excellent work contains everything architects, contractors and prospective builders should know about brick. It is a worthwhile treatise which could serve excellently as a text in vocational schools. It is a text on construction, on brick-laying and on estimating the cost of brick work.

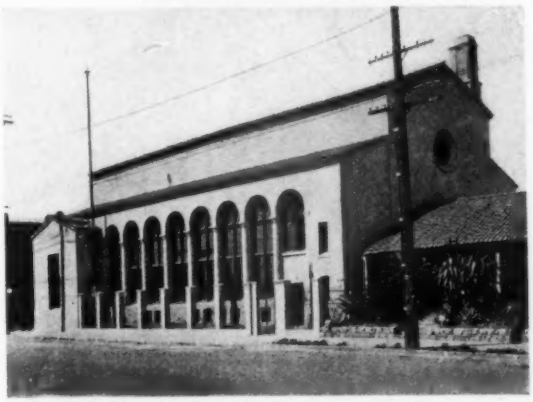
**Brick, How to Build and Estimate. By William Carver, Architect. 72 pp. Many illustrations and tables. 8½x11 in. Cleveland, Ohio. The Common Brick Manufacturers' Association of America. 25 cents.*

A REVIEW of RECENT ARCHITECTURAL MAGAZINES

BY C. HOWARD WALKER

THE Journal of the American Institute of Architects, October, 1921. Mr. Whittaker in Shadows and Straws thinks we quarrel over Rights in regard to Capital and Labor and forget Needs, that the consumer is forgotten because we "have a form of ownership which dictates the control of industry." He goes on to define and analyze types of land ownership—their social significance, etc. He thinks the condition

From "The Architectural Record"



County National Bank and Trust Company, Santa Barbara, Cal.

Myron Hunt, Architect

"Cataclysmic" and in an attempt at amelioration this number of the Journal is devoted to those questions.

First Mr. Thomas Adams writes upon reserving productive areas within and around cities, a proposal to substitute wedges for concentric zones. This, when analyzed, merely acknowledges that urban areas and agricultural areas are benefited by being interspersed. The manner in which this should be done being dependent upon water sources, contours, character of land, propinquity to other centers, etc., etc. This is mere ordinary commonsense and its application varies with every occasion for its use.

Mr. Whittaker thinks it is unusual for a magazine to assay an effort to lift architecture and the realm of things worth while, and praises *The Century* for the effort in Mr. Price's article in the September issue. He in one sentence admits that the illustrations distort (therefore, they do not illustrate) yet he thinks that this is the way that an apathetic public may be inspired to look at architecture. This is a peculiar logic, and a more peculiar philosophy. By all means let us say the thing that is not with authority, so that the misguided public may learn the thing that is. This way madness lies. Is this the message that we wish to get "across to the crowd"? We confess we are bewildered by Mr. Whittaker's writing. One moment it has an almost maudlin sentiment for the ills of the under dog as he sees him, and then he is ready to "get things across" to that pathetic animal so as to educate him. We are interested to know what he would say to certain elements of our own faith. First, that men are not born free and equal. Second, that rewards are very apt to be placed where they are deserved and to be of the character which is deserved. Third, that the exceptions prove the rule. Fourth,

From "The Architectural Forum"

Housing Development at Crompton, R. I.

The Housing Company, Architects

that sound and good education is not served by any pabula of dramatic and sensational statement, or by the thrashing of straws.

The second article is by Mr. Henry Wright asking "Shall we Community Plan"? Also, shall we return to "Normalcy"? We recommend Jack Bunsby's remarks, "If not, why not"? etc.

Mr. Benton Mackaye who writes the third article "An Appalachian Trail" recognizes the element of the undeveloped span Time and advocates more

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life in the open, and the refreshment of recreation, and then maps his Appalachian Trail which is a good one.

Mr. George Herbert Gray writes on the Land Question as related to City Planning Housing. He

From "The Architectural Record"

County National Bank and Trust Company
Santa Barbara, Cal.
Myron Hunt, Architect

especially analyzes Manhattan, which is valuable for Manhattan, which by the way is unique. His further analyses and conclusions are valuable, but we note the use of that delightfully vague adjective "adequate" which, of course, leaves "adequate" leeway.

From "The Architectural Record"

Door Detail—Residence of Miss E. S. Cushing, Waban, Mass.
Grandgent & Elwell, Architects

Meantime the Appellate Division of the Supreme Court in Brooklyn has decided that a reasonable rent is 10 per cent. This puts it up to the tenant as to what he demands, more than it does to the owner as to what he provides, and there is a very decided fly in that ointment. And this suggests that sanitation, heating, electricity of a superior character are demanded under City Building Laws; that areas of stairs and of egresses, and fire escapes are also required that the safety of the community has forced items of construction and of maintenance to a degree which is as far as possible fool-proof and thorough. And upon that side the government, Federal, State and Civic, has

From "The Architectural Forum"

Detail of Main Façade—Girls' School and Lower School,
Milton Academy, Milton, Mass.
George F. Shepard, Architect

incurred expenses which must be met by taxes and rentals. That those who pay the least taxes are precisely those who injure and destroy the precautions that are necessary for their protection, and for the safety of the community and these are the people who are condoned. Here is a chance for a "new approach" to the subject, for any one who wants it. The demands of areas for the offices of public officials, (not the rooms for the working staff, but for the officials) is notoriously so great as to areas that it would be well to say how many square feet many of these officials require. These gentlemen, however, it is fair to say, are not condoned.

The working classes have now (only as a step to further demands) a slogan "Eight hours' sleep, eight hours' rest and recreation, eight hours' work (which is not always intensive). How many in-

dependent workers, professional or otherwise, abide by that schedule and succeed? What has become of the midnight oil? Why do we have correspondence schools, or technical schools or colleges? Is the ideal life to which a man is looking the return for two-thirds of his life in something which will allow him to do nothing for two-thirds of it? It seems like an exaggerated economy of opportunity. Yet these gentlemen are condoned, and are to be fostered. Let it be stated frankly that if those subject to crime and disease, fostered by laziness and idleness were not poisonous in their exhalations and therefore to be controlled by force and edict, the world would long ago have let them decimate themselves. The beneficial factors of modern life are safeguarding themselves, and in so doing have diverted the merciless and salutory punishments that nature inflicts upon the violators of decency. We are pauperizing the morals and morale of a considerable part of our populace. When a man delights in what he can do, well done; when he balks at bad work and poor work and will not do it, we will hear less about lack of employment, minimum wage and hours and housing problems. Self respect is a silent virtue.

From "The Architectural Forum"

View of Main Façade—Service and Sales Building, Cadillac Motor Co., Detroit, Mich.

Albert Kahn, Architect

The Architectural Record, July, 1921. The Carson College for Orphan Girls at Flourtown, near Philadelphia, by Mr. Albert Kelsey is delightful. The article explains that Mr. Carson left several millions to found a home for orphan girls, stipulating that no two children should be dressed alike, in order that they should not be instantly marked as from an institution. The Japanese dress their school children all alike so that no unusual quality of cloth or ornament may make distinctions or cause jealousies. That is the opposite

From "The Architectural Record"

One of the Gables of Thistle Cottage—The Carson College for Orphan Girls

point of view. But charitable institutions have always caused a feeling of pity and occasionally of superiority in the minds of those who needed the charity. The uniform became a slight brand, not as in the case of organized bodies for concerted action, a mark of distinction. Mr. Carson deliberately, therefore, forbade uniformity of dress. Variety was desired and requested. The trustees and the architect have responded in the very best manner. The buildings are colleges with individual character, and named after flowers and with symbolism expressive of their names. The imagination of the child, that precious quality which can be so heedlessly ignored, is appealed to in carving, in sculpture, in details. Instead of the grim rows of identical rooms and windows in identical

(*Concluded on page* 368)

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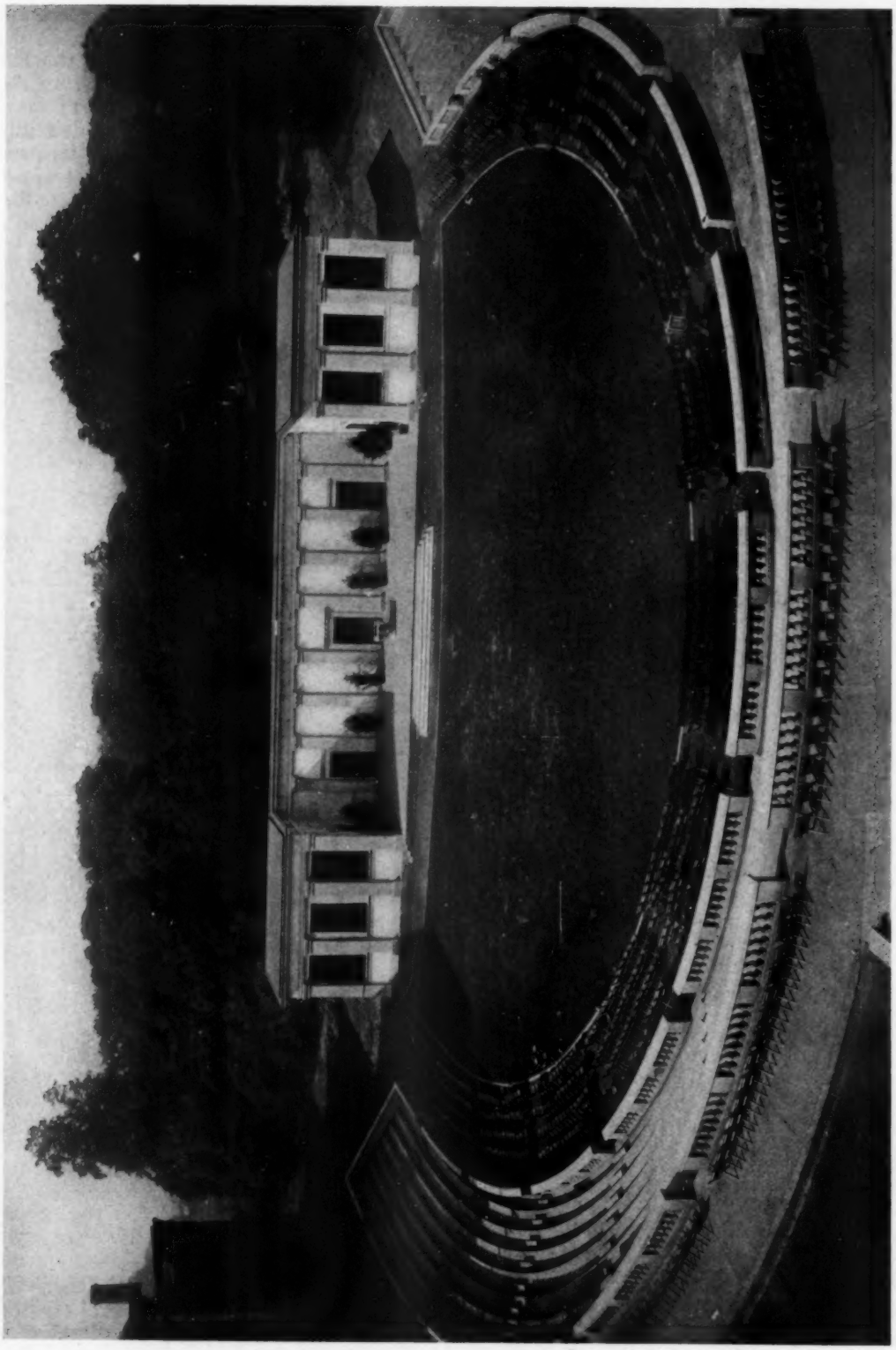

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THE AMPHITHEATRE, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA.
FISKE KIMBALL, ARCHITECT

LOOKING TOWARD MECHANICAL LABORATORY

THE AMPHITHEATRE, UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VA.

FISKE KIMBALL
Architect

Photo by Underwood & Underwood

LOOKING ACROSS STAGE

Review of Architectural Magazines

(*Continued from page* 356)

façades, these colleges have individuality, change face to greet the sun at various angles, and while maintaining the same pitch to their roofs, which insures a general harmony, they are never twice alike. The uniformity is the uniformity of nature, i. e., that of type with constantly variant details, and it is the loving attention to these details that appeals throughout the work.

Never since the days of the facades that are on the courtyard of the Museum at Rouen, or upon the ends of Shrewsbury gables, have vergeboards been delightfully carved, and decorated in color. Textures whether of wall or of roof-chimneys, doors and their jambs, have all received careful attention. We have long speculated why a group of architects in Philadelphia have, more than any others of the profession, shown the faculty for taking infinite pains in their work. This quality is characteristic of Cope & Stewardson, Wilson Eyre & McIlvaine, Day & Klauder, Medary, Kelsey and others. It cannot be too highly praised, or too often followed, and the lack of it is responsible for much perfunctory and dreary work and for many lost opportunities.

Mr. A. Lawrence Kocher contributes his eighth article upon Early Architecture of Pennsylvania Mantelpieces, illustrating with excellent and simple examples.

Mr. Frank Chouteau Brown has Part II of Tendencies in Apartment House Design Remodelling, an interesting article showing research.

The Portfolio of Current Architecture illustrates Mr. Myron Hunt's County Bank & Trust Company building, Santa Barbara, Cal., which is quite like a church in the interior of the banking room, having nave and aisles and a wooden roof, although without clere-story windows. The exterior also resembles a church. There seems to be no reason why mammon should not reside in a church, as he has for years resided in temples.

Grandgent & Elwell's house at Waban is one of the delicately detailed, well proportioned Colonial houses of which many are now being built.

The Architectural Forum, June, 1921. The opening article is upon Charles Bulfinch's church at Lancaster, Mass. It is not one of the best of his works, the solids of its tower leaving something to be desired in their relative proportions, especially above the colonnade. Also the sun burnt buttresses are undesirable. The interior has beauty and fine proportions and the pulpit has unusual merit.

Mr. Wirt Rowland illustrates buildings relating to the automobile industry. These are practically loft buildings, and it is gratifying to find that they are being treated so sanely and are receiving careful attention. Especially is this the case with the Durant Building for the General Motors Company and the Service and Sales Building for the Cadillac Company in Detroit.

Mr. W. N. Crowen's Hotel Somerset, Chicago, like all buildings with many uniform windows, whether they be for automobiles or for human beings, is treated at its base and crown, leaving the intermediate stories simple. That is good commonsense. Mr. Crowen, accenting his crown with center motives, has overdecorated those motives at the top and driven them too far into the cornice.

Mr. Shepard's Girls' School, Milton Academy, Mass., is good and has delicately detailed porticos.

The Housing Company's developments in New England are of different degrees of merit, those at Crompton, R. I., being the best. All are to be commended for their simplicity and for their restraint in gable ramp projections.

Authentic Precedent in Colonial Interiors is illustrated by excellent interiors littered with collections of incongruous though excellent pieces of antique furniture. It is perfectly natural that these old houses should become museums of donations, but there is no reason why discrimination should be lacking in the association of the pieces, and the appropriateness to the room, and also to the number of pieces in a room.

Delano & Aldrich have a rich, well designed, proportioned and detailed mantel for the living room of the house of James A. Burden, Syosset, Long Island, N. Y.

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THE MEMORIAL QUADRANGLE, YALE UNIVERSITY, NEW HAVEN, CONN.

James Gamble Rogers, Architect

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A Discussion of the Plan and Scope of The American Specification Institute

A specification as used for building and engineering construction and equipment should be a qualitative description of the materials, methods and workmanship, which, when assembled in orderly fashion in accordance with a studied arrangement as expressed in the drawings accompanying it, will produce a building or engineering structure or equipment that is economically constructed for efficient use. A specification must be brief, concise, coherent, comprehensive without verbosity and an explicit statement of all elements necessary to the satisfactory accomplishment of the desired result.

In almost all cases, an engineering or architectural specification is accompanied by drawings that express, in a quantitative manner, the desire of their author in the fabrication, manufacture or construction of the engineering or architectural structure or equipment. Thus the scope of any project is usually outlined by linear measurements and illustrations of architectural, structural or equipment requirements in the drawings and through description by the specifications so that the estimator, the contractor, the owner and all others concerned in the accomplishment of the work have all the necessary data available.

The engineer or architect who is responsible for the design and construction of a building or engineering structure must be intimately acquainted with a vast number of materials and processes and, as his knowledge of these and his skill in their use, are increased he finds his object more easy of accomplishment. The person who writes specifications for such structures must have a thorough knowledge of the subject matter of the various subdivisions of his specifications and since the average mortal cannot hope to learn, through personal experience, all he must know in order that he may achieve success, he must look to some source or sources of authoritative information for assistance.

A certain amount of knowledge with respect to the writing of specifications is possessed by all who are engaged in technical work but there is a great deal of knowledge that is not easily accessible to all writers of specifications.

Every specification comprises certain elements that are necessary in order to convey to the mind of the reader all fundamentals that will govern in the execution of the work. Although it is not expressed in so many words, practically all specifications have been prepared with a view to the economic use of materials and methods, consistent with the component parts available to use and with the results that are considered most desirable. Economic values always must be considered, else the wasteful processes that will be encouraged by a disregard of such consideration will bring to the engineer or architect a reputation that will not be to his credit.

Certain standards of excellence in workmanship or materials must be specified so accurately that there will be no question as to the aims of the author of the specifications. Likewise it is oftentimes necessary or desirable to present to the one who is to execute the work a choice of several alternative ways of accomplishing the ends sought. In order that both of these elements may be provided for with scientific precision, it is necessary that the architect or engineer become acquainted with the standards and alternatives that are available for use and that are most desirable for any particular operation. The description of materials, methods and their use cannot be made in a brief, concise, coherent and accurate manner unless the one writing the specifications has, at his finger tips, all facts that will be of assistance to him in formulating his judgment.

Another element of specifications is the use made of them as the instrument of instruction to all concerned as to how each step in the work is to be accomplished. Specifications should not only describe materials and methods but they should, in addition, instruct the men engaged in active construction or installation work as to the means by which the materials and methods are to be used in order that results will conform with those conceived in the mind of the engineer or architect. This element is intimately bound in with the general descriptive element of specifications, yet it should not be confused with it.

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All specifications for building and engineering structures and for many classes of equipment or co-related operations must be accompanied by general contract conditions and instructions to bidders. It is rare to find these elements missing although they may not have been given sufficient consideration to give them prominence.

SPECIFICATIONS may be divided into four classes insofar as their contents are concerned. These classes are materials, methods, construction and equipment. Many specifications and, in fact, most specifications that are used in building and engineering structures, combine three of these four elements, that is to say, for building and engineering structures the specifications will embrace materials, methods and construction while for the equipment there will be these same elements with a sub-element of installation after shop construction.

Specifications are essential to the proper and orderly conduct of the business of all those concerned in buildings, engineering structures of all classes and for all manner of equipment of whatever kind which may be placed in or about such works. We have, then, the following classification of users of specifications: Engineers, architects, contractors, manufacturers, vendors, labor, owners, buyers, operators.

Each one of these classes is vitally interested in having at his disposal good specifications, the intent and purpose of which cannot be questioned. To each of them a good specification brings the assurance that there will be smooth operation and cordial relations for all concerned, whereas mediocre specifications mean everything but cordiality and happiness.

Owing to a present lack of means for collecting and distributing information concerning specifications there is a needless duplication of study, research and labor on the part of specification writers. This condition tends to make the work seem arduous, as it is quite often, if there has been no effort expended toward meeting the conditions present in the individual office. Those specification writers who have had sufficient vision to analyze the problems that they must meet and who have attempted to organize their work in some more or less methodical fashion, have been gratified to find the time so spent has been well spent.

Practically all other professions are so organized that the interchange of knowledge peculiar to their profession, such as the deliberations of committees which formulate proposed standards for basic operations and the results of researches undertaken by scientific laboratories, is effected in such a way as to result in the improvement of the quality of specifications produced and as a direct consequence, has resulted in an improvement in the professional and business standing of their authors.

The American Specification Institute has been organized to improve all those conditions surrounding the writing of specifications and to bring to specification writers the benefits that are to be obtained from organized efforts of men accustomed to study and write these essential documents.

The kinds of specifications that are to be studied and for the preparation of which informative data is to be compiled and distributed to members, include those for buildings, engineering structures and all works whatsoever in which materials of construction and labor are used; those for the installation and use of mechanical, electrical and sanitary apparatus and equipment; those for the fabrication and installation of all furnishings and furniture; those for all exterior and interior ornaments and ornamentation; those for road paving, planting, embellishing and improving of landscapes, estates and waterways; and those for all miscellaneous matters and things that are produced and offered for sale under specifications written by the engineer or architect.

These activities will be of interest to all those architects and engineers who are striving for perfection in their "instruments of service" and especially to such as have to do with the engineering or architectural features of the following classes of structures, and their equipment for efficient and economical use:

Industrial Buildings, Public Buildings, Residential Buildings, Power Plants, Highways, Bridges, Railroads, Street Railways, Public Service Distribution, Combustion Apparatus, Sanitary Works, Hydraulic Works, Flood Control works, Marine Works, Illumination.

The American Specification Institute will cooperate with all national and local engineering and architectural societies and with all manufacturers and trade associations that are endeavoring to formulate standards for materials and methods that should be available to all writers of specifications. The members of each society or association are kept informed of the activities of its committees and other deliberative bodies within its organization and occasionally have brought to their attention the activities of other societies that may be of interest to them. It is these activities that The American Specification Institute will bring to the attention of its members so that their great value will be available to all possible users of the informative data released for publication.

The engineering and architectural professions will, through The American Specification Institute, gain benefit because of the consequent more intense development of specification writers and the development of specifications that will eliminate cause for argument and guesswork and produce more economical and efficient construction and equipment installation by the elimination of waste of labor and materials.

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To Preserve the Lorelei

THANKS to the enterprise of a local athletic club, the Lorelei Rock, famed in song and legend of the Rhineland, is to be preserved for all time against injury at the hands of an ever-changing world. Whatever may be the fate held in store for the Rhine country, the dwelling-place of the mythical and terrible maiden will remain as an abiding landmark in the Rhine panorama. For a consideration of 7,000 marks, reports the Boston *Transcript*, the Lorelei Rock has been bought by a neighboring athletic club, who propose to use its summit as the parade and exercise ground for gymnasium classes.

The world certainly has no quarrel with the Lorelei—either with the rock itself or with the legend. The mythical maiden was, to be sure, a terrible and fearful being; she delighted to ensnare the helpless fisherman, dragging him down to a miserable death. But in their death were not these fisherfolk infinitely better off than those who were caught, like rats in a trap, in the Lusitania, and scores of other vessels, to whom was not even given the chance of turning a deaf ear to the siren's voice of death? Better a hundred Loreleis than the flesh and blood realities of the von Tirpitzes and the Bernhards.

By all means, therefore, let the Lorelei be preserved. For it is one of the rapidly diminishing ties which bind the twentieth-century Germany to the legendary life of the Rhineland; to the days when Weltmacht was a thing unknown in the German world, even in its dreams.

A Few Facts About China

CHINA has the largest population of any country in the world, one-fourth of all the world's people.

China has coal deposits as great as those of the United States, yet is still importing coal from Japan.

Chinese farmers get the largest yield per acre of any farmers in the world.

In some sections a large portion of the tillable area is covered with the unmovable graves of ancestors.

Wages in China are low. Women silk-reelers in Shanghai get from eight to eleven cents a day for eleven hours' work.

Steel workers in Hanyang, common laborers, get three dollars a month.

In 120 of China's silk mills thirty-five per cent. of the women and children employed are under fourteen years of age.

Moving pictures are popular in China, particularly those of the slap-stick kind.

China has one of the world's best postal systems. Rates are cheaper and deliveries more frequent in Canton than in New York.

Half of the world's cigarettes are smoked in China.

The Chinese invented printing before the West. Shanghai publishes seventy-three newspapers.

Over ninety per cent. of all the Chinese are illiterate.

Not one woman in a thousand can read or write.

Old Latin Quarter to Yield to Modern Office Buildings

NO portion of the French metropolis is more familiar to the people of the New World than the so-called Quartier Latin. For centuries it has been the haunt of the students of literature, of art and of every sort of science. It is picturesque, dingy and unhealthy. But every artist, every scientist from this side of the Atlantic who has lived in Paris for the purpose of study has at one time or another made his home in the Latin Quarter, while tourists from all parts of the world would not dream of leaving the French capital without visiting this particular region, which has furnished the theme of so many novels and pen pictures and that has been the home of so much comedy, tragedy, drama and romance.

For purely sanitary reasons it ought to have been done away with years and years ago. The houses were built without any regard to ventilation and when modern plumbing was utterly unknown. How men and women can exist there today in these unwholesome but picturesque, well-nigh medieval surroundings, and, above all, how they can give free rein there to their genius and to their art without being oppressed to the point of asphyxiation by the unhealthy stagnation of the atmosphere has always been a matter of surprise to foreigners.

Now, however, the municipal council of Paris has become alive to the necessity for reform. Much metropolitan land is being set free by the demolition of the walls of Paris and of its old fortifications. The city authorities have accordingly voted to devote some 40 acres of this land near the Pare de Montsouris to the establishment of a sort of university settlement for the students of the University of Paris. It is proposed to construct in the center of tree-shaded playing fields buildings in which the students, now crowded together in the Quartier Latin, can be comfortably housed at the most moderate charges. The buildings will include restaurants, a library, recreation rooms and gardens, with accommodation for some 5,000 students of both sexes.

The estimated cost is about $8,000,000, and of this sum the multimillionaire philanthropist and deputy Deutsch de la Meurthe has already contributed a gift of a couple of million dollars. Canada, Sweden and Argentina, countries which send so many of their young people to Paris for the

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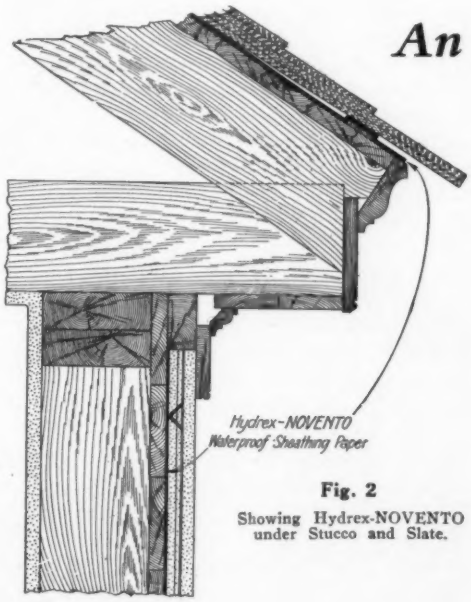

Fig. 2
Showing Hydrex-NOVENTO under Stucco and Slate.

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completion of their studies, have expressed their intention of contributing to the expense, while the transformation of the land now occupied by the Quartier Latin, in the center of the city, into well-lighted, well-ventilated office buildings and apartment houses, with all the sanitary arrangements up to date and of the most modern description, will furnish a handsome revenue now and in the future to the municipality in bringing about this long-needed reform.

Artists Above Ethics?

THE Philadelphia *Public Ledger* has opened an interesting discussion on this topic. In a recent issue it is stated that a curious ethical problem is raised by the public exhibition of certain portrait busts of the leaders of the Bolshevik tyranny by a young woman who disclaims all intention of propaganda in exploiting their lineaments and excuses her seeming ignorance of or indifference to the real horrors of Russia under Bolshevism by a naive plea that is akin to saying that artists, if not art, need not be moved by questions of moral right or wrong.

Why, when the whole world is coming to a moral judgment on the evils of Bolshevism, art should be represented as indifferent to the shame of the thing is something that has not yet been explained by the artist who has represented herself as wanting to see a revolution because life was "so dull" in Moscow, and who is quite unconcerned as to what her subjects were or stood for so long as she could get them to sit for her. It is a most curious kind of casuistry that has justified this rushing into Russia in order to parade before the world the visages of those whose evil indifference to all standards of humanity has had such hideously grim results. Indeed, the most subtle form of propaganda is that which invests those who serve the Devil with the livery of Heaven; in this case the glamour thrown over the unspeakable Reds by invoking the fine arts in their behalf. For, after all, people are not compelled to send flowers to murderers nor is art forced to limn the "heroes" in murderer's row, or to debase its talent at the feet of those from whom the world shrinks in unfeigned horror.

Taking Pleasure in the Home

IT is a rare home today where the recreational center of gravity has not shifted outward, remarks the *Minneapolis Journal*. When the family wants a good time, it seeks it outside of the family circle. The modern home has been defined as the place where one goes to change his clothes in order to go somewhere else. Pleasures and recreation are sought outside of the home circle, for the most part, rather than in it.

As one looks back to earlier days through a domestic tribute like Whittier's Snowbound, he is surprised to find what self-sufficiency, poise, quiet joy and rich reward dwelt within the confines of that simple pioneer New England home. This early home did not have music or many books, great art or rich rugs, but there was a quiet, pervasive joy that knit the family together. Such a circle was its own recreational center of gravity.

It argues something bare and cheap in a home where the family become habitual migratory seekers after pleasure outside the home. The best housing conditions in the world may prevail; but it is a poor family life if the members are always mobilizing to find their pleasure elsewhere. Community centers are good in their place. Libraries and art galleries render valuable service, but at best, they are poor substitutes for the home as a recreational center, where young and old alike ought to have the best kind of a good time all around.

Recent Disclosures as to Pompeii

A NEW idea of the ancient city of Pompeii and the life led there is gathered now that recent excavations have been made, according to Edward Robinson, director of the Metropolitan Museum of Art, who recently returned from a visit there. Previous excavations showed one-story buildings, with straight, plain walls in front. The new excavations show that Pompeii was a town of two-story buildings, with balconies at the fronts of houses, most of which had shops in them with awning-like projections.

"The recent discoveries show that the shops were usually closed on the street fronts by large wooden shutters made of slats which opened and shut like modern blinds," stated Mr. Robinson, at the Willard. "When the shutters were closed, they were fastened on the inside with a long bar. In most of the buildings only the front part has been excavated—the shops and the entrances leading into the residences. In many of the shops were found the things that had been on sale. The aim has been to restore the shops as they were before the eruption.

"In the interior of many of the houses Prof. Spinazzola, who is in charge of the work, has discovered, in addition to the central courts with peristyles, little gardens. Some of these are hardly larger than the top of a good-sized table. From the flower designs in the frescoes on the wall Prof. Spinazzola has learned the varieties of flowers that the inhabitants of Pompeii knew and has replanted the gardens with the flowers that decorated the beds 2,000 years ago. Where formerly Pompeii was resurrected dead Prof. Spinazzola is making of it a living city."

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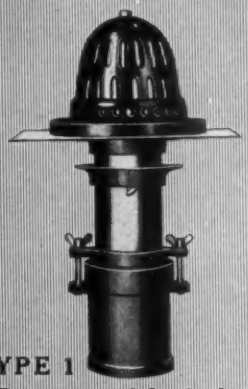
ROOF CONNECTIONS

No Roof is Perfect Without Them

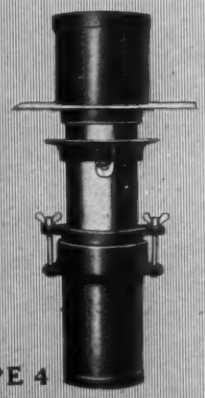


TYPE 1

To connect with Leader Lines Flat Surface

TYPE 6-L

To connect with Leader Lines Flat Surface



TYPE 4

To connect with Vent Pipes Flat Surface

The Expansion Joint that Prevents Leaks

THE patented Expansion Joint prevents leaks in the roof around the in-take and leaks in the connection (if the pipes ever stop up).

There's a type of Holt Connection for every type of roof, and the installation is simple.

Made by The Barrett Company and backed by *Barrett Service*. For complete details and specification, ask for Architectural Service Sheets Nos. 4, 5 and 6.

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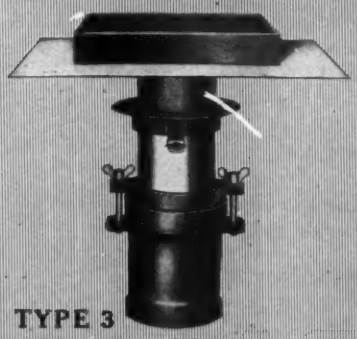
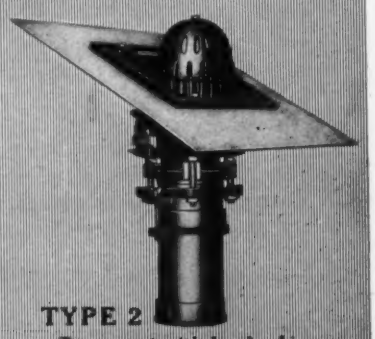


TYPE 3

To connect with Leader Lines Flat Tile or Brick Surface



TYPE 2

To connect with Leader Lines Steep Surface

PERSONALS

Batchelder and Scales, architects and engineers, announce the removal of their office to 426 Board of Trade Building, Indianapolis, Ind.

Chambers & Thomas, architects, announce the removal of their office to Reconquista 491, Buenos Aires, Argentina.

Theodore L. Perrier, architect, has removed his office to 305 Marine Bank Building, New Orleans, La.

Stephens and Pearson, architects, have moved their office from 74 De Menil Building, St. Louis, Mo., to 1425 Chemical Building, that city.

It is announced that James R. M. Morrison, architect, is now located at 64 West Randolph Street, Chicago, Ill.

Henry P. Whitworth, architect, is now practicing architecture at 402 Hickox Building, Cleveland, Ohio.

Allen & Collens, architects, have moved their architectural offices from 40 Central Street to 75 Newbury Street, Boston, Mass.

Charles L. Browne, architect, announces that he has associated with R. V. Martin, with offices in the Milwaukee Building, Houston, Texas. Manufacturers' catalogs and samples are desired.

J. Osborne Hunt, architect, announces the removal of his architectural offices from 114 North Montgomery Street to 219 East Hanover Street, Trenton, N. J.

Edgar & Verna Cook Salomonsky, architects, announce that they have removed their architectural offices from 368 Lexington Avenue to 331 Madison Avenue, New York City.

Announcement is made that Edward Burnett, the Farm Expert, has moved his offices from 367 Lexington Avenue to 331 Madison Avenue, New York City.

Harrison Earl Baldwin announces the opening of an office for the practice of architecture at 28 Carmel Street, New Haven, Conn. Manufacturers' samples and catalogs are requested.

George C. Burnett, architect, formerly of Waco, Texas, has opened an office at 315-16 Herald Building, El Paso, Texas, and is desirous of receiving manufacturers' catalogs and samples.

Announcement is made that the H. H. Winner Company, bank architects and engineers, have removed their offices to the second floor of the Cunard Building, 503 Market Street, San Francisco, Cal.

H. W. Goetz, architect, wishes to announce that he has opened offices for the practice of architecture in the Falls Building, Memphis, Tenn., and desires to receive manufacturers' samples and catalogs.

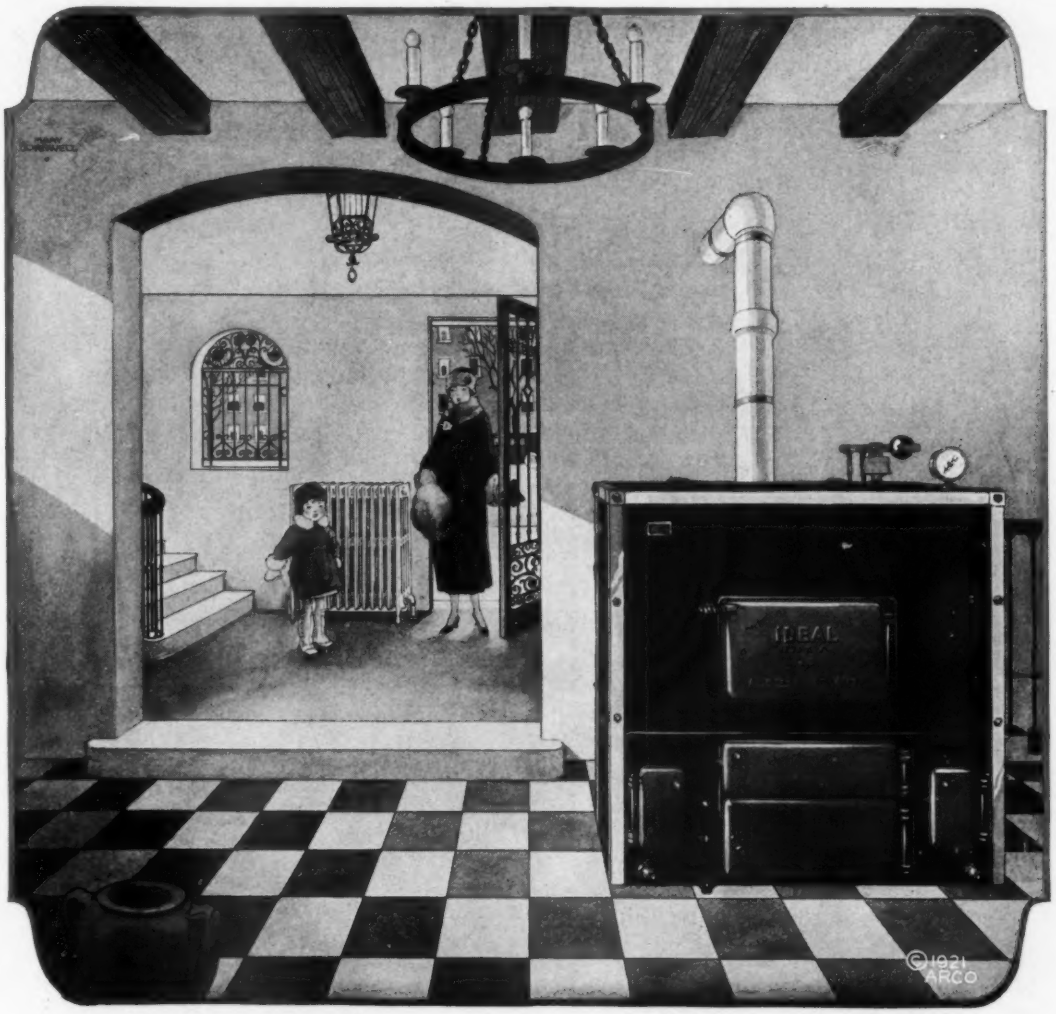
Smith & Reynolds, architects, formerly Juul, Smith & Reynolds of Sheboygan, Wis., have opened an architectural and engineering office in Manitowoc, Wis. Edward A. Juul will continue the business formerly conducted by the firm in Sheboygan.

Announcement is made that the partnership existing between Pendleton & Corrubia, architects, has been dissolved, and a new partnership has been established by Angelo B. M. Corrubia and Gale E. Henderson, who will practice their profession under the firm name of Corrubia & Henderson, architects, with offices in the DeMenil Building, 119 North Seventh Street, St. Louis, Mo.

Philip Horton Smith, formerly with Kilham, Hopkins & Greeley, and Edgar T. P. Walker, formerly with Cram & Ferguson, have formed a partnership for the practice of architecture under the firm name of Philip Horton Smith & Edgar T. P. Walker, architects, with offices at 1260 Little Building, Boston, Mass. Manufacturers' samples and catalogs are requested.

It is announced that George Issenhuth, architect, has recently moved his office from 215½ to 222½ Dakota Avenue, Huron, South Dakota, where he will continue the practice of architectural and engineering work. Manufacturers' catalogs and samples are desired. Mr. Issenhuth also wishes to announce that he is desirous of forming a partnership with a high grade, experienced professional worker.

George C. Hugill and Wilfred F. Blatherwick have formed a partnership for the practice of architecture under the firm name of Hugill & Blatherwick, with offices at 366-67 Boyce-Greeley Building, Sioux Falls, South Dakota. Mr. Hugill has been practicing in that city for several years and Mr. Blatherwick was formerly head draftsman and designer with Perkins & McWayne. Manufacturers' samples and catalogs are desired.



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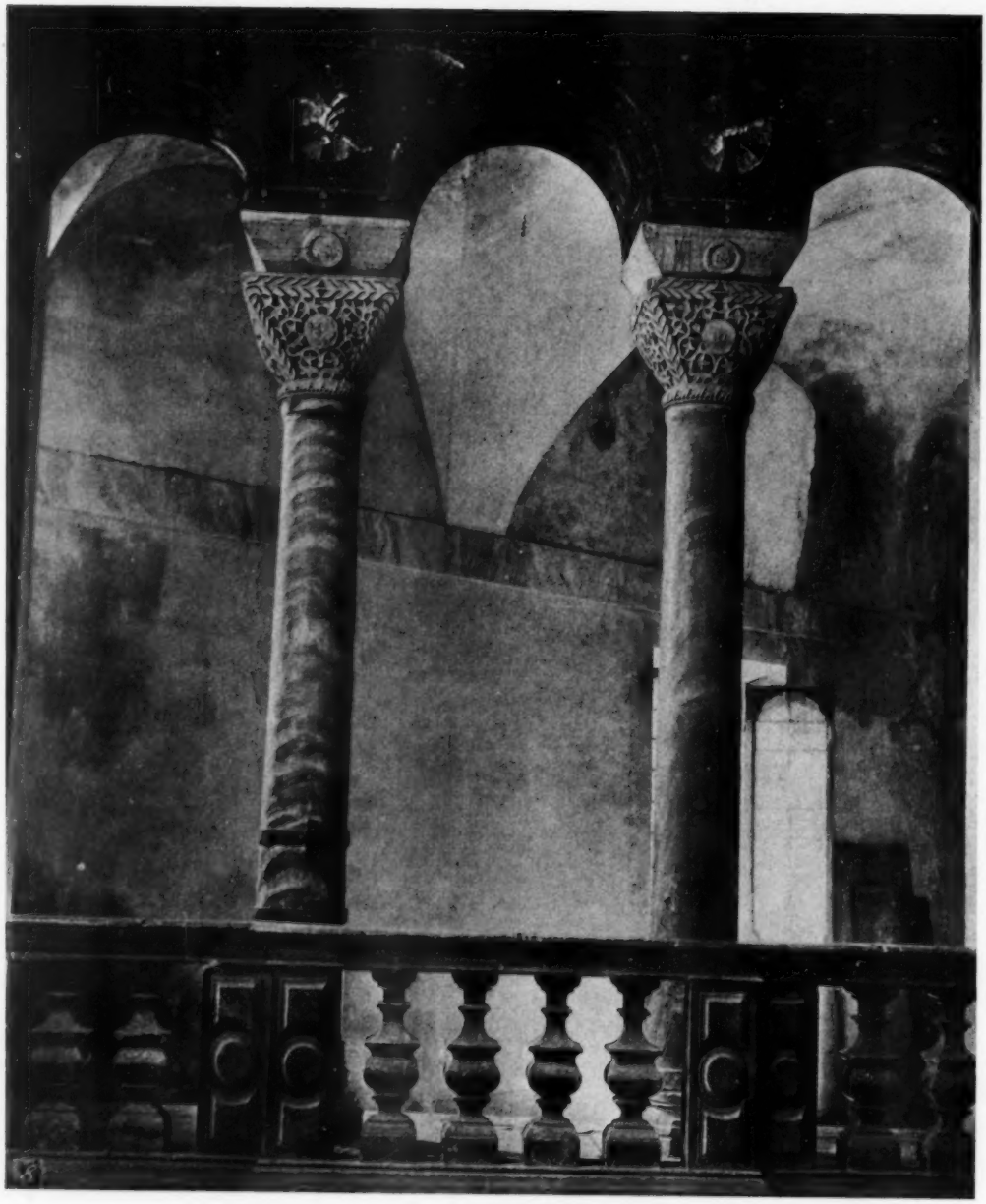
Tabulation of Building Costs

Seventh of THE AMERICAN ARCHITECT'S series of cost tables, figures for which were furnished by Architects throughout the United States. The first compilation appeared in the January 12 issue.

Type of Building	Location	Type of Construction	Equipment	Foundations	Total cubic feet	Contract price or bid received	Cost per cubic foot	When figures were taken
Juvenile Detention .. Home and Court-house.	Chicago, Ill.	Fireproof; brick bearing walls; reinforced concrete joist floors.	Vapor heat; electric light; enameled iron plumbing; front elevator; ash elevator.	Reinforced concrete.	1,940,000	$785,000	.41	Sept. 1921
6 Story Apartment..	Chicago, Ill.	Fireproof; brick bearing walls; reinforced concrete joist floors.	Vapor heat; electric light; porcelain tubs; vitreous lavatories and toilets. 3 passages and 2 front elevators; electric push button control.	Reinforced concrete.	800,000	350,000	.44	Oct. 1921.
Bank	Lyndhurst, N. J. ...	Fireproof, concrete.	Heat; electric light; good plumbing.	Concrete	105,200	59,471	.56	Sept. 1921.
Bank	Hightstown, N. J. ..	Fireproof, concrete.	Heat; electric light; good plumbing.	Concrete	88,000	58,057	.65	Sept. 1921.
Bank	Camden, N. J.	Semi-fireproof; brick walls; terrazzo floors.	Webster modulation heat; electric light; good plumbing.	Reinforced concrete.	107,242	54,925	.51	April, 1921.
School	Delair, N. J.	Semi-fireproof; brick walls; concrete and wood floors.	Hot air heat; ventilation; electric light; plumbing.	Concrete	251,328	57,198	.23	July, 1921.
School	Woodland Manor, N. J.	Semi-fireproof; brick walls; maple floors.	Vapor heat; ventilation; electric light; plumbing.	Concrete	131,328	40,824	.31	July, 1921.
4 Story Office and Bank Bldg.	Chicago, Ill.	Fireproof; 2 sides stone and 2 sides brick walls; concrete and tile floors.	Steam heat; electric light; plumbing roughed in for fut. off. division; 2 electric elevators.	Floating concrete.	725,000	355,000	.49	July, 1921.
Hospital	Portland, Ore.	Fireproof; walls hollow tile, concrete and brick; floors reinforced concrete.	Steam heat; fan ventilation; electric light; first class plumbing; 2 electric elevators.	Reinforced concrete; spread footings.	350,000	205,000	.58	July, 1921.
Medical School	Portland, Ore.	Fireproof; walls concrete and brick; floors reinforced concrete.	Steam and fan heat; electric light; first class plumbing; one electric elevator.	Reinforced concrete; spread footings.	432,000	246,000	.57	August, 1921.
School	Oswego, N. Y.	Fireproof; tile and brick walls; concrete and wood floors.	Steam and fan heat; electric light; plumbing.	Concrete piers.	1,480,665	444,515	.30	July, 1921.
Club Building	Ossining, N. Y.	Ordinary; brick walls; steel trusses; wood floors.	Hot water heat; electric light; plumbing.	Stone.	299,520	65,000	.21	August, 1921.
Residence	Ossining, N. Y.	Wood frame; stucco; 2 story; 7 rooms.	Hot water heat; electric light; plumbing.	Stone.	19,740	9,000	.45	August, 1921.

XUM



ARCADES OF THE GALLERY—CHURCH OF S. VITALE, RAVENNA, ITALY